Vowel quantity and the fortis-lenis distinction in North Low Saxon

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CHAPTER 5. LOW GERMAN VOWELS

5. Low German vowels

The previous chapters provided phonetic data of LG as well as a brief analysis of the stress system. We found that both phonetically short vowels and phonetically long vowels count as light. The LG stress pattern does not yet allow for a clear-cut phonological interpretation of the data, though. Let us therefore turn our attention to the LG vowels to determine how the durational differences witnessed in the vocalic system can be analyzed phonologically.

The analysis of LG vowel length has been a matter of quite some debate over the past 100 years, as has been pointed out in chapter 2.3 above. Three main approaches have been brought forward, attempting to explain the issue on phonological grounds:

i) a tonal contrast of TA1 (pushing tone) vs. TA2 (dragging tone);
ii) the assumption of a ternary contrast in vowel length of short vs. long vs. overlong, or short vs. half-long vs. long; and
iii) a twofold binary contrast of vowel length (short vs. long and overlong) and vowel quality (lax vs. tense).

This chapter evaluates these three positions for the vowel system of LG. We will see that the account in iii) is preferable, being supported best by the phonetic facts presented in section 3.2 to 3.6. However, this approach has to be adjusted in the light of the stress analysis provided in chapter 4. Instead of a vowel length opposition short vs. long and overlong, we arrive at a contrast of short and long vs. overlong. The vocalic facts are closely interrelated with the issue of coda consonants. What I will argue later on is that a quantitative approach in terms of Mora Theory is possible to explain the LG data. The key are the laryngeal features of the consonants (a matter that will be discussed in more detail in chapter 6). They enable us to account for the special status of lenis obstruents – the only consonants that allow for phonetic overlength of a preceding vocalic nucleus.

With respect to these nuclei, we found in the Perception Test no cue to the existence of distinctive tonal contours in the speech of the investigated LG informants of Altenwerder and Alfstedt. The same is true for the perception sample obtained from the on-line listening experiment. Also, the production data of the three dialects of Kirchwerder, Altenwerder, and Alfstedt were inconclusive with respect to the possible presence of distinct pitch contours. Only one informant (III.6.Aw) produced some cues for a difference. While this must not necessarily mean that the contrast is expressed in a different way, I assume that due to the existing interface between phonetics and phonology (see section 2.1) it is rather likely that the opposition is expressed not in terms of tones.\footnote{Kehrein (p.c.) notes that it is indeed impossible for tones to play a role in the phonological system of LG if the informants neither produce nor perceive specific tonal contours.}

We crucially observed that it was mainly the vowel duration that had a noticeable effect on the perception of the stimuli by the informants. Three rather distinct
durational degrees of short : long : overlong were witnessed in the production data. A neutralization between phonetically long and overlong vowels occurs mainly in the mid vowels. Their durational differences between ELD 2 and ELD 3 is somewhat weaker than for closed vowels and open vowels (except for the Kw. data). This was discernible from the minimal pairs as well as the complete samples of the LG informants. The complete samples showed that closed vowels as well as open vowels exhibit a more pronounced durational difference between the two length categories ELD 2 vs. ELD 3, with the conservative JND of 20 - 25% being met at all times. The results give us reason to presume that for the informants the synchronic LG contrast is not a matter of pitch contours (and thus tonal accents) but rather of durational difference.

Before diving into the analysis of the LG vowel phonemes, I give a brief overview on the vowel qualities and the matter of vowel length in the language. The phonological analyses of the vowel system follow thereafter.

5.1. Vowel quality
Although inherently inseparable from segmental length, I will try to focus on the quality of the LG vowels first before continuing with the matter of vowel quantity. I assume the following autosegmental structure of vowels (Clements & Hume 1995; van Oostendorp 1995):

Van Oostendorp (1995:10) postulates “that the class nodes labeled ’C-Place’, ’V-Place’, ’Laryngeal’, ’vocalic’ and ’Aperture’ are structural non-terminals; they cannot occur in a representation unless they dominate some feature.” The major class features are specified directly on the root node (segmental node). The class nodes V-place and aperture determine the place of articulation within the oral cavity and the manner of articulation (e.g. tense or lax), respectively. These two parameters define the actual quality of the vowel.
5.1.1. **LG monophthongs**

The general LG vowel pattern is given in Figure 51. Note that local varieties may differ in the actual realization of these phonemes, especially by means of diphthongization.\(^{169}\) We have 14 qualitatively differing monophthongs in the system, plus the schwa-vowel. It has been pointed out in the discussion on LG stress that schwa is a defective vowel in the sense that it is structurally empty. Its vocalic node does not branch. The schwa may therefore be interpreted as lacking a vocalic node in the sense of van Oostendorp (1995), which results in the rather deviant behavior of this vocoid.

*Figure 51. The LG vowel system*

<table>
<thead>
<tr>
<th>/lax/</th>
<th>/tense/</th>
<th>/overlong/</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i] 'to lie-3.Sg.'</td>
<td>[ris] 'rice-Sg.'</td>
<td>[riiz] 'giant-Sg.'</td>
</tr>
<tr>
<td>[iy] 'little'</td>
<td>[fy] 'fire-Sg.'</td>
<td>[Lyy] 'people-Plantum'</td>
</tr>
<tr>
<td>[u] 'must-3.Sg.'</td>
<td>[hus] 'house-Sg.'</td>
<td>[druuv] 'grape-Sg.'</td>
</tr>
<tr>
<td>[e] 'six'</td>
<td>[zoen] 'son-Sg.'</td>
<td>[bloord] 'leaf-Pl.'</td>
</tr>
<tr>
<td>[a] 'to let-3.Sg.'</td>
<td>[loet] 'to let-3.Sg.'</td>
<td>[doov] 'deaf-adj.f.'</td>
</tr>
<tr>
<td>[dax] 'day-Sg.'</td>
<td>[?ud] 'all'</td>
<td>[mazun] 'to mow-Inf.'</td>
</tr>
</tbody>
</table>

The vowels are divided into two basic categories: lax vowels and tense vowels:\(^{170}\) lax vowels are phonetically short, tense vowels are either phonetically long or phonetically overlong.\(^{171}\) Table 27 exemplifies the vowel set of LG.

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\(^{169}\) Lauf (1988).

\(^{170}\) The transcription given in square brackets is a generalized moderately broad phonetic transcription. It denotes e.g. the voicing difference found for the final coronal fricative in ‘rice-Sg.’ vs. ‘giant-Sg.’. Where the former is unanimously produced without any vocal fold vibrations, the latter shows variance in its realization. It varies from slightly devoiced [z] to completely devoiced [s].

\(^{171}\) Note that overlong mid vowels are diphthongized in some varieties of LG (e.g. Kw., Aw., Finkenwerder, Alfs., Dierkhusen, Bardenfleth, Osterbruch, Horneburg), hence Aw. LG [ɛeç] ‘harrow-Sg.’, [bloord] ‘leave-Pl.’, [doov] ‘deaf-f.’. Furthermore, no monophthongal overlong realization of the open degree is available across the LG dialects.

\(^{172}\) From MLG ēgede.
The diachronic development of the LG lax and tense vowel phonemes is summarized in Table 28 below by means of the dialect of Wesseln / Dithmarschen (Kohlbrot 1901, cited in Wiesinger 1983b:1064).\footnote{See van Oostendorp (1995) for a discussion of the terms and alternative labels such as [aperipheral], [open], and [±ATR] or [±RTR].}

Table 28. Diachronic development of LG vowels

<table>
<thead>
<tr>
<th>LAX VOWELS</th>
<th>TENSE VOWELS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LG</strong></td>
<td><strong>MLG</strong></td>
</tr>
<tr>
<td>i</td>
<td>&lt; i, (\ddot{i})_{CSS}, (^{\text{(e)N-C}})</td>
</tr>
<tr>
<td>y</td>
<td>&lt; y, (\ddot{y})<em>{CSS}, (\ddot{y})</em>{CSS}</td>
</tr>
<tr>
<td>u</td>
<td>&lt; u, (\ddot{u})<em>{CSS}, (\ddot{u})</em>{CSS}</td>
</tr>
<tr>
<td>(\ddot{e})</td>
<td>&lt; c, (\ddot{e}), (\ddot{e}<em>{2}, \ddot{e}</em>{4}, \ddot{e}<em>{i})</em>{CSS}</td>
</tr>
<tr>
<td>(\ddot{\alpha})</td>
<td>&lt; (\ddot{\alpha}, \ddot{\alpha}<em>{2}, \ddot{\alpha}</em>{4})_{CSS}</td>
</tr>
<tr>
<td>(\ddot{\varepsilon})</td>
<td>&lt; (\ddot{\varepsilon}, \ddot{\varepsilon}<em>{2}, \ddot{\varepsilon}</em>{4}, \ddot{\varepsilon}<em>{i})</em>{CSS}</td>
</tr>
<tr>
<td>a</td>
<td>&lt; a, (\ddot{a})<em>{CSS}, ((i, e), \ddot{a}</em>{h}, \ddot{a}_{dental})</td>
</tr>
</tbody>
</table>

We see here that MLG long vowels in closed syllables were shortened via a process of closed syllable shortening (CSS). The lengthened vowels in Table 28 result from a process of open syllable lengthening (OSL) in pre-MLG time. This development does not occur anymore at later language stages.

The synchronic presence of a lax vs. tense difference has been briefly outlined in chapter 3 above. This topic has been subject to a variety of phonetical studies although to my knowledge only one study is concerned with the contrast in LG.\footnote{This is quite similar to the respective vowels of the Nilo-Saharan language Dinka (Remijens & Manyang 2009).} But what determines this opposition phonologically? I give an overview on the phonetic findings and the possible phonological interpretations of the lax vs. tense contrast in the succeeding section.

5.1.1.1 LG lax and tense

The lax and tense vowels differ phonetically most notably in terms of F1, F2, and intrinsic duration. Other phonetic and articulatory correlates of lax vowels as compared to their tense correspondents were found to be a gestural overlap in CV

\footnote{Circumflex ( ^ ) marks Pre-MLG long Vs, macron ( ´ ) marks MLG lengthened short I\(\ddot{s}\). The sound changes within the set of mid vowels are denoted as follows (Wiesinger 1983a:821, 1983b:1045, 1071ff.): MLG \(\ddot{e}_{1}\) [ae] < i-Umlaut of WGerm \(\ddot{a}\); MLG \(\ddot{\alpha}_{1}\) [ae] < W Germ i / e; MLG \(\ddot{e}_{2}\) [ae] < WGerm au / \(\ddot{e}\); MLG \(\ddot{\alpha}_{2}\) [ae] < WGerm au; MLG \(\ddot{e}_{4}\) [ae] < WGerm e; MLG \(\ddot{\alpha}_{4}\) [ae] < WGerm a; MLG \(\ddot{e}_{i}\) [ae] < WGerm ai / \(\ddot{e}_{i}\); MLG \(\ddot{\alpha}_{i}\) [ae] < WGerm ai; MLG \(\ddot{e}_{2}\) [ae] < WGerm ai / \(\ddot{e}_{2}\); MLG \(\ddot{\alpha}_{2}\) [ae] < WGerm ai; MLG \(\ddot{e}_{4}\) [ae] < WGerm ai / \(\ddot{e}_{4}\); MLG \(\ddot{\alpha}_{4}\) [ae] < WGerm ai; MLG \(\ddot{e}_{i}\) [ae] < primary Umlaut of WGerm ai; MLG \(\ddot{\alpha}_{i}\) [ae] < primary Umlaut of WGerm a.}

\footnote{CSS: Closed Syllable Shortening.}

\footnote{L. Spiekermann (2002, 2004) for Low German. For rather recent research on Standard German see among others Kroos et al. (1997), Hoole & Mooshammer (2002), Pape & Mooshammer (2006).}
and VC sequences, increased tongue and jaw movement, relative stability with respect to temporal manipulations (i.e. speech rate differences), an early aligned intensity peak, and a lower number of intensity peaks and acceleration peaks (Hoole & Mooshammer 2002; Spiekermann 2004). Also, the nature of a succeeding C was and is subject to phonetic scrutiny in order to clarify the lax vs. tense vowel distinction. Dutch and English word forms show for example a difference in the F0 peaks in dependence on the quality of the nucleus. Ladd (2004:125) notes that “the peak accompanying a long [i.e. tense] vowel is late in the vowel, but accompanying a short [i.e. lax] vowel is late in the following consonant.” This suggests that a syllable boundary following after the F0-peak is introduced right after the vowel in the former case, and within the consonant in the latter case. A distribution of \( V_{\text{tense}}C.C \) vs. \( V_{\text{lax}}C \) is the result.

It is a rather complex bundle of phonetic properties that defines the lax vs. tense contrast. The perceptual relevance of the qualitative difference between the two vocalic categories was confirmed for the northern (i.e. Hamburg) varieties of Standard High German by Weiss (1976), and for Low German by Kohler & Tödter (1984) and Kohler (2001). With these experimental findings, it appears reasonable to assume a phonological relevance of the opposition tense vs. lax.

It has been mentioned above in chapter 4 that the LG lax vowels, like Dutch and Standard German lax vowels, require a coda C to close the syllable. They never occur in open syllables. This behavior has been variously expressed in the literature by means of a prosodic syllable-cut correlation (e.g. Trubetzkoy 1939, Spiekermann 2004), a mono-positional representation of lax vowels in a obligatorily bi-positional nucleus (van der Hulst 1985:57), or the ‘Compulsory Coda Principle’ (Barry et al. 1999), the OT constraints \( \text{CONNECT}(N, \text{lax}) \) (van Oostendorp 1995:4) and \( \text{LAX}+\text{C} \) (Gussenhoven 2009).

All of these approaches have in common that they crucially refer to the vocalic aperture feature [lax] of vowels. Vowels with a specification for [lax] have properties that vowels lacking this feature do not have. Van Oostendorp (1995:34) accordingly defines that “a syllable \( \Sigma \) is bimoraic iff the head of \( \Sigma \) dominates a feature [lax] (= \( \text{CONNECT}(\sigma_{\text{aux}}, \text{lax}) \)) in a moraic theory of syllable structure […].” This entails that a succeeding intervocalic C is rendered ambisyllabic, i.e. becomes a ‘virtual’ geminate that occupies the (moraic) coda position of a preceding syllable and at the same time the onset position of a succeeding syllable (van der Hulst 1984, 1985). The phonetic indications for the syllable boundaries mentioned above appear to lend some support for these assumptions.

The effect is the same in all theoretic frameworks. The lax vowel may not occur in an open syllable and is not affected by (synchronic) lengthening processes. Only
tense vowels may lengthen and may acquire a second mora. In order to express this in OT terms I adopt the constraint LAX+C given by Gussenhoven (2009), slightly amending it to XIX)\footnote{I prefer this constraint concept above \textsc{Connect}(\textsc{omu}, lax) because it refers to the branchingness of the syllable in a different way than the connect constraint does. It enables the necessary exclusion of a syllable branching into two lax constituents in LG, and allows for the occurrence of monomoraic CVC\textsubscript{lenis} sequences (see section 6.2.2).}.

| XIX) | LAX+X: a lax vowel requires a subsequent \textit{segment} in the same syllable. |

This constraint can be illustrated as follows (Gussenhoven 2009:185).

\textbf{Figure 52. LAX+X syllable structure}

\[ 
\text{The difference to the constraint LAX+C assumed by Gussenhoven (2009) is that LAX+X is more general. It is not specified what segment needs to close the syllable since it may be [+cons] as well as [-cons]. This means that even a vocalic segment is able to satisfy LAX+X. It takes into account the occurrence of lax-tense diphthongs in LG mentioned in section 5.1.2 below. However, it also opens up the possibility of lax-lax configurations, i.e. lengthening of the short lax vowel to a bisegmental long lax vowel; a rather undesirable result because we generally do not find long lax vowels in LG. The OCP (Obligatory Contour Principle) offers a straightforward possibility to exclude these configurations. It crucially disallows two adjacent identical segments within the same Pr\textsubscript{Wd}, i.e. segments containing certain matching features – in this case [lax].}\footnote{See Fukazawa (1999) for a detailed discussion of the OCP on features.}

| XX) | OCP: No identical adjacent elements. |

A bisegmental representation would therefore need to change into a monosegmental representation. And now the circle becomes full. LAX+X is violated by having a bimoraic though monosegmental lax V in the nucleus. Another segment would still need to follow in the same syllable. This renders the whole lengthening process pointless. The effect of the interaction of both constraints on the lax vowels is visible in the following tableau. Note that the given output forms are not the overt forms for the metrical constraints developed in chapter 4 still have to be applied.
### Tableau 15. [boddsl] ‘bottle-Sg.’

<table>
<thead>
<tr>
<th>CVCC(\mu)C(\mu) lax</th>
<th>OCP</th>
<th>LAX+X</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) CV(\mu)C(\mu)(\cdot)C(\mu)(\cdot)C(\mu) lax</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>(b) CV(\mu)C(\mu)(\cdot)C(\mu) lax</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>(c) CV(\mu)V(\mu)C(\mu)(\cdot)C(\mu) lax lax</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>(d) CV(\mu)(\cdot)C(\mu)(\cdot)C(\mu) lax</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

The respective invalid structures of (c) and (d) follow in Figure 53. Only (a) meets both criteria by creating an ambisyllabic geminate C.

### Figure 53. Invalid lax nuclei

It is evident that only consonants or tense vowels may follow a lax nuclear vowel. Whether or not a coda consonant receives a mora depends on its quality and the position of the syllable in the PrWd (i.e. morpheme-finality). Since LAX+X is never violated, i.e. lax vowels never occur in open syllables, we can assume that it is undominated in LG.

The behavior of the LG tense vowels is generally different from the lax vowels. They are left unspecified for the feature [lax], which allows them to occur in open syllables. They indicate no need for a coda C. Even stronger, one needs to assume that the tense vowels cannot have a following tautosyllabic C or ambisyllabic C word internally – not even in the case of consonant clusters (Wolfgang Kehrein p.c.). They exhaust the syllable. This property in conjunction with the constraint of FOOT BINARY (F\(\text{FTB}\)) mentioned in XIV) in chapter 4 has often been taken as evidence for a phonologically long, i.e. bimoraic or heavy, representation of tense vowels. The system of LG primary word stress has shown, however, that phonetically long tense vowels count as light with respect to syllable weight just like the lax vowels do. If we want to express this in terms of OT, the currently employed

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183 See LG ‘hedgehog-Sg.’ [ˈsvɪŋɡəl].
184 E.g. *lal'kojplon ‘above-Sg.’, or *lal’baxros ‘id.’. The word-final position, and hence monosyllables, are a different matter. A final C may be rendered extra syllabic if it is lenis, or may require parsing if it is fortis or sonorant (see section 6.2).
constraint set is not yet sufficient. It would be possible to achieve bimoraic output forms by Richness of the Base (ROTB) in contexts where phonetic overlength is not applicable. An underlyingly bimoraic vowel could be kept bimoraic. I therefore argue for a constraint that generally excludes vowels with more than one mora at the surface level.\footnote{See van Oostendorp (1995) on Dutch vowel length. Note that this constraint is only relevant in the case of phonetically long tense vowels. They are required to be able to be bimoraic in the case of phonetic overlength, resulting in a lower ranking of $^{*}V_{\text{mid}}$ as compared to \text{LAX}+X and OCP.}

\begin{itemize}
  \item [XXI)] $^{*}V_{\text{mid}}$: No bimoraic vowels.
\end{itemize}

An effect of this constraint is that monomoraic CV\textsubscript{tense} syllables emerge. Examples are [mu.'troos] ‘sailor-Nom.Sg.’ and [mu.'trats] ‘mattress-Sg.’ where the initial open syllable fails to attract stress (i.e. remains light) inspite of the general bias against final stress in LG (see section 4.1.4). This monomoraic status is kept in the LG output form by means of the faithfulness constraint $\text{DEP-}\mu$.

\begin{itemize}
  \item [XXII)] $\text{DEP-}\mu$: Every mora of $S_2$ has a correspondent in $S_1$.
\end{itemize}

This constraint essentially determines that for every mora present in the output form a corresponding mora must be already present in the input form. The insertion of an additional mora as a repair mechanism (e.g. by means of $\text{FTBIN}$) is therefore disallowed. Mora deletion is, however, not penalized. The – rather infrequently occurring – monosyllables ending in a monophthong (e.g. [ro:] ‘raw’) are consequently counted as monomoraic.

All in all, the vocalic aperture node with its feature [lax] appears to have a crucial influence on the syllable structure of the according nucleus. We will see later in the discussion of the consonants that another (namely consonantal laryngeal) node has a similarly important impact on the metrical structure of fortis and lenis consonants. The features of segments can, thus, be assumed to determine the metrical representation.

5.1.2. \textit{LG diphthongs}

In addition to the 14 monophthongs, we generally find five synchronic diphthong qualities in LG. They developed from the MLG long mid vowels. All of these diphthongs have qua articulation a closing or level jaw movement. The differences between ELD 2 and ELD 3 pointed out for the monophthongs are also valid for the diphthongs, dividing them into two categories: normal long diphthongs and overlong diphthongs. Table 29 gives some minimal pairs.
CHAPTER 5. LOW GERMAN VOWELS

Table 29: Diphthongs of Aw. LG

<table>
<thead>
<tr>
<th>[long]</th>
<th>[overlong]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[fjo]n ‘beautiful’</td>
<td>[mxd] ‘tired’</td>
</tr>
<tr>
<td>[main] ‘river Main’</td>
<td>[main] ‘to mow-Inf.’</td>
</tr>
</tbody>
</table>

The MLG origins of the synchronic diphthongs are given in Table 30 (Wiesinger 1983b:1064).

Table 30. Diachronic development of LG diphthongs

<table>
<thead>
<tr>
<th>DIPHTHONGS</th>
<th>LG</th>
<th>MLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>ε(çi)</td>
<td>&lt; ě₂, ě₄, ě₁</td>
<td></td>
</tr>
<tr>
<td>o(çi)</td>
<td>&lt; ð₂, ð₁, (øy)</td>
<td></td>
</tr>
<tr>
<td>o(çj)</td>
<td>&lt; ð₂, ð₁, [(a)h + dental]</td>
<td></td>
</tr>
<tr>
<td>a(çi)</td>
<td>&lt; ei, (ȅ)hiatus, (øy)</td>
<td></td>
</tr>
<tr>
<td>a(çj)</td>
<td>&lt; ou</td>
<td></td>
</tr>
</tbody>
</table>

These genuine diphthongs are complemented by synchronically derived diphthongs of underlying Vr-combinations. The original /r/ vocalizes to a full-fledged [a] in post-vocalic, syllable- or word-final position. The result is that, in conjunction with the preceding V, opening diphthongs like [ia, ua, oa, ea] emerge in the overt form.

5.2. Vowel length

Coming back to vowel length and moraicity and the issue of the LG ternary vowel durations, it was already mentioned above that the matter is inseparable from the vowel quality. Not all qualities may occur in all durational degrees. The lax vowels are inherently shorter than their tense correspondents, as has been pointed out in section 4.1.2; be it under main stress or in unstressed position. They occur only in the ELD 1 as defined in chapter 3, i.e. as short vowels. The tense vowels by comparison occur preferably in ELD 2 and ELD 3, i.e. as long vowels and phonetically overlong vowels. Only if the vowel quality is left aside do we reach a three-way length system for the LG vowels of (lax) short V : (tense) long V : (tense) overlong V. The near-merger between ELD 2 and ELD 3 of the mid tense vowels is regarded as an example of an ongoing process of contrast neutralization. The length difference is, however weak, still present in the production data. Neutralization is, thus, not yet achieved.

186 Instead, we find e(çi) in Aw. LG.
The analyses of the LG recordings from the villages of Kirchwerder, Altenwerder, and Alfstedt are corroborated by the data obtained in the listening experiments. There we find that the informants distinguish between ELD 2-items and ELD 3-items mainly on the basis of vowel duration. Lengthening of an item in utterance-final position cannot be held liable for enhancing the phonetic difference between the two length degrees. The recordings of Kw. and Alfs. exhibit a particularly weak trend towards this process. The speakers from Aw. produced the vowels of domain-final ELD 2 and ELD 3 items even with a slightly shorter duration than vowels of corresponding domain-medial items. This is a rather curious finding for a Germanic language. Does this already indicate the factual presence of overlength in LG as spoken by the informants investigated?

If we follow the footsteps of Remijsen & Gilley 2008’s analysis of Luanyjiang Dinka, the absence of final lengthening in a ternary system would be no surprise. The authors assume that a ternary quantity contrast is the absolute and upper limit for length contrasts, defined and constrained by the phonetic space available for duration distinctions. As a result, final lengthening would be virtually impossible in the longest degree – and consequently in the other length degrees if the quantity contrast is supposed to be maintained.

Apart from pre-pausal lengthening, another – phonological rather than phonetic – lengthening process has been mentioned already earlier in this study. This is compensatory lengthening (CL). I briefly introduce this issue and the trouble it causes in the mora-theoretic framework in the next section.

5.2.1. CVCV Compensatory Lengthening
In the past, the diachronic loss of a final vocalic segment (schwa) and resulting compensatory lengthening of the preceding nucleus has been assumed to be the source of overlength in the North Low Saxon dialects. This is reason enough to have a closer look at this process and its theoretical implications.

First of all: what does CL entail? What does it actually do? Kavitskaya (2002:xi) formulates it as follows:

187 Duration is perceived logarithmically (Allan & Gibbon 1991). This means that you perceive a duration factor of e.g. 1.5 always as equally salient, i.e. the difference between 100 ms and 150 ms feels the same as the difference between 200 ms and 300 ms (Paul Boersma p.c.). An effect is, as Lunden (2006:7) notes, “that increases in duration are less noticeable when added to already long durations.” Hence, if the same perceptual difference between long and overlong vowels in final position is to be maintained, more absolute duration must be added to the duration of the overlong segments. This means that the absolute duration difference between long vowels and overlong vowels in final position would be expected to be bigger than in non-final position.

188 Other approaches regard the lengthening as a by-product of the transfer of the tonal properties of the deleted final syllable to the nucleus (von Essen 1957; Hildebrandt 1963). To my knowledge it was only Kohler (2001) who came up with an explanation different from both approaches, assuming the phonetical pre-lenis lengthening of vowels to constitute the origin of the vowel length differences. This interpretation is utilized also in the CVCV CL description by Kavitskaya (2002).

189 The assumption that the LG third degree of vowel length developed not by means of CL but rather as an instance of OSL (Emilie Caratini p.c.) is not justified. Firstly, also vowels lengthened by OSL undergo additional lengthening to ELD 3 (e.g. [doo] “day–PL”), secondly, the process of OSL cannot be restricted to VClenis alone, which would automatically lead to the occurrence of lengthening also in VCfortis-cases.
“The term compensatory lengthening (CL) refers to a set of phonological phenomena wherein the disappearance of one element of a representation is accompanied by a corresponding lengthening of another element.”

This process may be diachronic or synchronic, and refers to the deletion of a segment or a syllable. The lengthening is optional rather than obligatory, i.e. deletion does not automatically result in lengthening. Kavitskaya basically distinguishes two types of CL. The first one is a process with vowel lengthening resulting from the deletion of a neighboring (generally tautosyllabic) consonant (Kavitskaya 2002:37); this is termed CVC CL by Kavitskaya. An example is the West Saxon vowel lengthening after g-loss (Kavitskaya 2002:77), or the Germanic vowel lengthening due to deletion of a subsequent nasal (Hayes 1989:291; also Kavitskaya 2002:63).

Figure 54. (a) West Saxon CVC CL after g-loss

*frgjan → frgnan, frjman ‘to ask’
*thegnaz → -thgn, -θmi ‘young man, thane’

(b) Gothic CVC CL after n-loss

*θɔŋxta → ɔ̃xta ‘thought’

The deletion of the syllable-final g in (a) and n in (b) leaves behind a position or mora that is not parsed by segmental content. It is subsequently filled by the preceding vowel, accordingly lengthening the nucleus (Hayes 1989). Numerous languages and language families employ(ed) this phenomenon, among which are Turkish, Kabardian, Ngajan, Ancient Greek, Komi, Latin, Lithuanian, Germanic, Bantu, Persian, West Saxon, Ket, Teheran Farsi, Hebrew, Indo-Aryan, Romansco Italian, Samothraki Greek, and Onondaga (see Topintzi 2006, Kavitskaya 2002 and references cited therein).

The second type of CL entails a conservational process that is triggered by the loss of a final V and that ultimately yields a durational increase in the preceding nucleus; it is referred to as CVCV CL (Kavitskaya 2002:35). This kind of lengthening is also what is assumed for LG. An example for this process is found besides other languages (e.g. Dinka, Lama, Bantu, Baasaar, Runyoro-Rutooro, Korean, Hungarian, Estonian, Saami, (Late Common) Slavic, and Germanic) in the Romance language Friulian (Kavitskaya 2002:104, citing Hualde 1990; Prieto 1992).

Figure 55. Friulian CV₁CV₂ CL

*kazu → kazio ‘case’
*lōvu → lɔʃ ‘wolf’
*rɪðu → rût ‘pure’
*mĕle → miʒ ‘honey’

100 Different from the other languages, Samothraki Greek is a case of CL by onset deletion.
Hayes (1989:286) provides an analysis in terms of Mora Theory. To account for the loss of the final vowel and the resulting changes in nucleus duration, he employs the mechanism of so-called Parasitic Delinking. This entails that “[s]yllable structure is deleted when the syllable contains no overt nuclear segment” (Hayes 1989:268). The process is termed ‘double flop’ by Hayes (1989:267). After apocope and the resulting deletion of the final syllable, the originally associated head mora becomes entirely free, allowing a new association. Crucial is here that also the original onset consonant of the second syllable loses its association. The mora is now allowed to dock onto the preceding syllable without violating the universal ban of crossing association lines. It becomes the second non-head mora of the nucleus. The final C is re-syllabified under the first syllable, constituting the new coda position. The process is illustrated in Figure 56 below.

Interestingly, we find a similar limitation on CL for Friulian as for LG. The lengthening of a V₁ is allowed across the board only if the consonant preceding the V₂ is voiced.¹⁹¹ What is different from the LG cases is that the deletion of the final vowel in Friulian is not restricted to schwa but to non-open vowels (Kavitskaya 2002:104). Intervening sonorant Cs show a split pattern with respect to lengthening. CL applies only in pre-lateral context, i.e. the most sonorous sonorant Cs,¹⁹² /r/ and nasals do not participate in the lengthening process. While vowels before /r/ are always long, pre-nasal vowels are always short.¹⁹³ The examples in Figure 57 illustrate this observation (Prieto 1992:212, 216ff.). The first column contains items with a segmental context allowing for CL; the second column on the right shows items that do not adhere to the CL prerequisites of Friulian. It is visible that a vowel length contrast occurs only in pre-lateral position in (a). It is established by means of CL.

¹⁹¹ A complication with the system arises due to the fact that Friulian is a voicing language, i.e. has a laryngeally specified voiced series [voice], whereas the voiceless consonants are left laryngeally unspecified. This is opposite to LG, which employs rather a laryngeally specified spread glottis series [s.g.] that is accompanied by unspecified voiced consonants. This issue will be briefly treated in the following chapter in the discussion of the consonant system.

¹⁹² See the phonetically grounded sonority scale provided by Parker (2002:236): low vowels > high vowels > glides > laterals, ɬ > flaps > trills > nasals > /h/ > voiced fricatives > voiced stops > voiceless fricatives > voiceless stops, affricates.

¹⁹³ Kavitskaya (2002:114f.) relates the occurrence of long vowels in pre-rhotic position to two combined processes: to diachronic simplification of rhotic geminates, and to the generally longer transition phases from vowels to rhotics that were phonologized after deletion of a non-closed final V. The short vowels in pre-nasal position have been argued in the literature to not have lengthened, because occurring durational enhancement was interpreted as a co-occurring property of nasalization (Kavitskaya 2002:115).
The vowel length contrast is neutralized in (b) and (c), with always long vowels (i.e. /l/) patterns together with the voiced obstruents, while the other part of the sonorants patterns with the voiceless consonants in neutralizing the vowel length contrast in Friulian. But let us have a look at some examples from LG in Figure 58 (a) and (b).

Phonetic overlength (i.e. ELD 3) occurs basically if a schwa is deleted at a morpheme boundary, or in interconsonantal post-lenis position.194 Kavitskaya notes that the specific lengthening processes that interact with consonant quality cannot be accounted for by Mora Theory – i.e. exactly the approach that has been advanced by Hayes (1989) to provide a phonological analysis of CL; it suffers from three major weaknesses:

i) Hayes’ (1989) Mora Theory predicts that only the deletion of a weight bearing segment can trigger CL. As an effect, CL because of vowel deletion should always be an option.

ii) Also, every (usually non-weight-bearing) consonant should behave uniformly, i.e. its quality should not matter. This is definitely not the case.

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194 The TA2 of the Franconian Rule B occurs roughly in those cases were we find phonetic overlength in LG (see section 7.3.4.2). The distribution is, however, not exactly parallel. If it was, the ELD 3 would be expected in LG in cases with originally long closed vowels or diphthongs in pre-lenis position after schwa-apocope, and in all originally long mid and open vowel or diphthong qualities. Vowels that became long after OSL applied would not receive ELD 3 but rather retain their status as ELD 2. This is, however, not the case in LG. Instead of this rather complex allocation, a more simplistic distribution occurs in LG. The phonetically overlong vowels or diphthongs are theoretically possible across all tense vowel qualities after pre-lenis position after post-OSL apocope, and in all tense vowel qualities after post-OSL syncope. Lax vowels are by definition not affected by this (or any other) lengthening process.
in either Slavic, Romance, or LG, where a voiceless C appears to block
CL (Kavitskaya 2002:29, 111f., 119f.).

iii) Lastly, it is unclear why the mora of the deleted segment should link to
the \( V_1 \) instead of associating to the \( C_2 \) (Fox 2000:100ff.).

Mora Theory undergenerates in these respects. It is not able to explain the
influence of the consonant quality on the lengthening process. Kavitskaya (2002) now
crucially assumes that the lengthening in the given cases of so-called CVCV CL can
be accounted for by means of a listener oriented approach. The durational increase is
not at all compensatory in nature. She notes that

“in certain contexts, intrinsic phonetic properties of the speech signal can be
misparsed and reinterpreted, yielding phonologization […]. CL as a historical
process does not in fact involve any transfer of length or weight. Rather, intrinsic
phonetic vowel durations […] are reinterpreted as phonologically significant upon
a change in the conditioning environment or syllable structure.” (Kavitskaya
2002:10f.)

This is, however, a matter of dispute for LG. Lengthening before sonorant Cs would
also be expected within this phonetic model. Note that Kavitskaya (2002:5102)
points out

“that vowel lengthening correlated with glides, liquids, nasals and fricatives in
certain environments can be viewed as perceptually-based phonetic change, since
vowels are usually longer in these environments.”

We found in chapter 3 for LG that vowels in pre-sonorant position, though
phonetically slightly longer than pre-obstruent vowels, do not generally receive
phonetic overlength – be it apocope-related or context-related lengthening. Those
vowels remain normally long. No lengthening applies here. Thus, it seems that
there is more to the sonorant Cs than the phonetic perspectives of Kavitskaya (2002)
and Kohler (2001) are able to explain. The intrinsic durations of the vowels can
definitely not account for the differences between ELD 2 and ELD 3 vowels.

Since it is virtually impossible to express the lengthening phenomenon in LG on
the basis of the vowel-deletion process alone, we need to consider the originally
intervocalic C as a factor in the lengthening equation. We come back to this point in
chapter 6.

Having set the corner stones of LG vowel duration, I move on to the possible
phonological analyses of the matter. The following sections now provide some
solutions with respect to the issue of how to properly treat the three steps of LG

\[195\) In addition to these shortcomings, a fourth flaw is mentioned in the literature. It entails that no gradual
change as assumed by Timberlake (1983) is possible if CL entails Parasitic Delinking (Hayes 1989) – the
complete deletion of a segment is prerequisite for CL to apply.

\[196\) The only exception was the ‘motherese’ informant III.6. Aw who produced a durational contrast
between ELD 2 and ELD 3 for pre-obstruent vowels and pre-sonorant vowels. It might be the case that
ELD 3 has been present in the pre-sonorant cases historically (Wolfgang Kehrein p.c.).
vowel duration. I seek to incorporate not only the phonetic facts established in chapter 3, but also the findings of the word-stress analyses of chapter 4.

5.3. The LG vowel system: triple vs. twin quantity

This section focuses on the possible phonological representation of vowel length in LG. I argue that a twofold binary approach comparable to the one proposed by Kohler (1986, 2001) is indeed applicable to the LG vowel system. Yet, the original version has to be amended in a number of ways; especially with respect to the reasoning behind the analysis. I argue that there is sufficient evidence – also in the data presented by Kohler (2001) – for a third length degree in the LG vowels. The phonological representation is, however, best characterized by means of a two-fold binary system that employs not only a lax vs. tense distinction, but also a weight distinction of light vs. heavy.

I do not yet give an analysis in terms of OT for the matter of LG vocalic overlength is irrevocably intertwined with the quality of the post-nuclear consonant that is discussed in chapter 6. This chapter is therefore constrained to the discussion of possible and – hopefully – meaningful approaches to explain the phonetic data scrutinized in chapter 3. The OT analysis follows only in the next chapter parallel to the considerations on the fortis vs. lenis issue.

5.3.1. An 'overlength' account for LG

The data I have presented in chapter 3 indicate the relevance of durational differences between the long tense vowels and the so-called overlong tense vowels of LG. Remember that Hayes’ (1989) phonological analysis for the development of this difference in terms of Moraic Theory employs the mechanism of Parasitic Delinking (see 5.2.1 above). The structures in Figure 59 visualize this process by means of LG ‘giants-Nom.Sg.’.

Figure 59. Trimoraic analysis LG ‘giants-Nom.Sg.’:

MLG                      LG
ω_i   ω_i   ω_i   >   ω_i   ω_i   >   ω_i   ω_i   ω_i
CVV.Cα   CVV.Cα   CVVC
lenis   lenis   lenis
[r i i z ə]   [r i i z ]   [r i i z ]

197 See section 2.3 for the available diachronic approaches to explain the phonetic occurrence of ELD 3 in LG (e.g. CL, phonetic lengthening in pre-lenis position, the urge to maintain the originally bisyllabic tonal contour).

198 See chapter 4 for a discussion of lax vs. tense in relation to LG syllable weight.

199 Note that similar proposals existed for the dialects of the Rhineland Accentuation area. They have been shown to be phonologically tonal (e.g. Gussenhoven 2000), although some researchers disagree (Kehrein 2009; Köhnlein 2011); see the various references discussed in Schmidt (1986).

200 The final obstruent of the LG form remains lenis synchronically not only in the underlying form but also in the surface representation (see sections 3.2 and 3.6). Note that the transcriptions of the MLG and pre-LG forms are hypothetical. The pre-LG form may have had a stronger voicing on the final /z/ or a
Chapman (1993) in her metrical approach to LG overlength assumes a rather similar structure. The difference is here that overlength is not interpreted as a segmental property but rather as a feature of the syllable. Chapman argues that the MLG trimoraic foot structure with its intonational contour (i.e. dragging tone) was preserved in LG, being reduced from a bisyllabic configuration to a mono-syllabic configuration (Chapman 1993:148). This readily explains why syllables with overlength are always stressed; each foot needs to dominate one stressed syllable – and since the foot is exhausted by the presence of the overlong trimoraic syllable, stress is automatically assigned thereon. It is the branching nucleus (i.e. the bisegmental VV), and more precisely its second part, that receives the mora of the deleted final schwa.\footnote{This process could be motivated in terms of OT by a high-ranked faithfulness constraint MAX IO (µ).} This process could be motivated in terms of OT by a high-ranked faithfulness constraint MAX IO (µ).

MAX IO (µ) crucially prevents morae of the input form from being deleted in the output form. All morae are preserved. In any case, the development from MLG to LG – be it in terms of Hayes (1989) or Chapman (1993) – leads to the lexical distinction in Figure 60 (a) and the surface quantity contrast shown in (b).

![Figure 60](image)

(a) \( \sigma \)

(b) \( /\text{ris}/ '\text{rice-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( = \)

\( /\text{ris}/ '\text{rice-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

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\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

\( /\text{riiz}/ '\text{giant-Nom.Sg.}' \)

A possibly co-occurring pitch contour with a delayed peak on the overlong vowels and diphthongs (i.e. the so-called Schleifton or dragging tone) is regarded as purely phonetic and thus phonologically irrelevant (Chapman 1993:136; Winter 1979:197).

5.3.1.1 Problems with overlength

As neatly as the overlength account incorporates the three levels of vowel duration of the investigated LG dialects into a phonological system, it does have some shortcomings.

First of all, the spreading of a free mora, i.e. a unit of phonological weight (Kim 2002:193; Blevins 1995:208), is usually not blocked by a preceding voiceless C. Yet, this is what we find in LG. According to Cohn (2003:70), the mora serves “as the connection or link between prosodic and segmental structure.” The so-called root nodes cover the segmental aspects of timing whereas morae are argued to cover the prosodic ones (i.e. weight). However, there does not necessarily exist a direct one-to-one mapping between the two of them (Cohn 2003:73). Thus, it is expected that short pause before the /z/, hinting at the lost final schwa and the old syllable structure with /z/ in the onset of the second syllable.

\footnote{See section 2.3.4.3.}
the free mora following the voiceless, formerly inter-vocalic C would move further to the left where it would dock onto the preceding vowel of the nucleus. This mora linking, however, does not occur for voiceless Cs. An example of this is the following pair that is minimally different to the examples given in Figure 60 above:

Figure 61.
(a) ELD 3 LG Saag [zooq] 'saw-Sg.' < MLG sage vs.
(b) ELD 2 LG Saak [zoek] ‘thing-Sg.’ < MLG sake

In Figure 61 (b), MLG voiceless [-k-] appears to have blocked the third mora from associating to the preceding vowel, while in 6 (a) MLG [-g-] did not; it allowed for the creation of a phonetically overlong (ELD 3) vowel. Hayes’ (1989) as well as Chapman’s (1993) approach to LG overlength does not cover this difference. Hayes wants to exclude possible interaction between apocopated schwa and its preceding consonant, which is why he crucially assumes that the consonants are not connected to morae but to syllables. This effectively renders his theory incapable of explaining the difference.

Considering Chapman’s (1993) approach we find that although she mentions the pre-lenis position of a vowel as one condition for the occurrence of overlength in LG, she fails at explaining the reason behind this observation. Her metrical account does not distinguish between lenis coda consonants and fortis coda consonants. She assumes that not the segments but rather the positions on the metrical grid are relevant for the lengthening processes (Chapman 1993:150). Her analysis is concerned only with the surface lenis obstruents, and the sonorant consonants. The former are regarded as extrametrical, i.e. as being located outside of the prosodic structure and prohibiting quadri-moraic configurations; the latter are assumed to be part of the nucleus. The blocking-issue of the fortis coda Cs as demonstrated in Figure 61 is neglected as being a purely phonetic matter. No further reference is made as to the structure of the fortis obstruents or their influence on a preceding vowel.202

Another deficit of Chapman (1993) is the restriction of her overlength analysis to morphological complex forms like [huuz] ‘house-Dat.’. Words such as [ziid] ‘silk-Sg.’ that are morphologically simple cannot be derived by Chapman’s rules.203 Instead, she assumes that overlength in these cases “must be specified in the lexical representation of the lexeme” (Chapman 1993:153, FN 43). It is unclear why the diachronic deletion of a morphemic schwa should require a Synchronic Alternation Rule (Chapman 1993:154), whereas the diachronic deletion of a non-morphemic schwa would result in lexical specification.

It is these analytical shortcomings that let Chapman’s (1993) approach appear rather questionable.

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202 Chapman (1993:131) asserts that some durational deviations in long vowels are results of the phonetic context. Long vowels in pre-lenis position are produced longer than long vowels in pre-fortis position. For Chapman (1993: 131), “the difference in vowel length serves as an important clue for identifying the character of the following sound”.

203 See section 2.3.4.3.
Something we need to bear in mind when dwelling on the matter of LG vowel length are the indications of the LG stress pattern as shown in chapter 4. The analysis in section 4.1.1 shows that tense vowels do not per se count as heavy (i.e. bimoraic or long) and therefore do not automatically receive stress (e.g. [ˈalkoʊsaŋ] ‘alcove-Sg.’). This finding already led us to the conclusion that non-final (C)VC syllables in LG are heavier than non-final (C)V syllables. We can assume that (C)VC syllables are generally bimoraic, and (C)V syllables are generally monomoraic, if occurring in non-final position within a PrWd. This obviously means that the V is monomoraic in both syllable types, independent of the lax or tense vowel quality. Only the phonetically overlong tense vowels count as heavy and attract stress by means of the SUPERHEAVY-TO-STRESS PRINCIPLE (SHSP, see section 4.1.2, paragraph VI). That this principle is in effect is evident from words of the structure CV.CV.CVVC with a final syllable containing an overlong vocalic nucleus (e.g. [teɪkəˈlau]) ‘rigging-Sg.’. Although the initial CV.CV sequence could be properly footed with stress assignment to the antepenultimate syllable, it is indeed the final CVVC syllable that receives stress.

We arrive at two kinds of light vowels (phonetically short lax V, phonetically long tense V), and one kind of heavy vowel (phonetically overlong tense V). This weight distribution does not call for phonological overlength in the quantity system. It rather looks like a binary opposition of short vs. long. Apparently, no trimoraic configuration is needed.

But the problems with overlength do not stop here. No genuine minimal-triples are available since the vowel quality changes between lax and tense for ELD 1 vs. ELD 2 and ELD 3. This qualitative factor has been shown to be perceptually relevant by Kohler & Tödter (1984), Kohler et al. (1986 b, c), and Kohler (2001) for LG, and by Weiss (1976) for the northern German regiolect of Standard High German (see 3.1.3). The importance of this aspect can also be inferred from the fact that the contrast between ELD 1 vs. ELD 2 is obviously not a matter of phonological weight. Both count as light with respect to word stress. The split between the phonetically short lax vowels and phonetically long tense vowels requires therefore an alternative explanation that a purely length-based account cannot provide. We will get to this point in due course.

The assumption of a phonologically overlong, i.e. trimoraic, syllable gives rise to a further issue as it violates the presumably universal principle of Maximal Binarity (MaxBin) that was given in XV). It does not allow more than two morae within one syllable, prohibiting effectively the occurrence of superheavy syllables in the output form.

We see that the phonological overlength approach for LG vowel quantity is rather problem-prone. Although the analysis by Chapman (1993) might be upgradable in terms of consonant quality, the remaining descriptive and theoretic

204 A bimoraic status of the phonetically short lax vowels is clearly undesirable from a analytical point of view. If the lax V were able to build a foot on its own, why would it require a coda to close the syllable?
206 This could also be expressed in terms of high ranked *Mora Crowding (*µµµ) (Prince & Smolensky 1993/2002:50, 2004:248f.).
issues are left untouched. We are in need of a different proposal for a LG vowel system.

5.3.2. The binary approach: Kohler

Aware of the problems with vowel quality, Kohler (2001) puts forward a binary analysis of the LG quantity system. Although he leaves open a relation to present phonological theories of weight, his conclusions for northern LG basically reflect the findings of Wodarz (1979) and Weiss (1976) for the northern German variety of Standard German. His analysis is based on phonetic scrutiny of four LG dialects, one being located within the defined 60 km radius around Altenwerder in Niedersachsen (i.e. Fintel), and three outside of this radius in Schleswig-Holstein (i.e. Windbergen, Brarupholz, and Haßmoor).

The geography defines naturally the dialect of Fintel to be most relevant with respect to the currently investigated varieties of Kirchwerder, Altenwerder, and Alfstedt. The Fintel study analyses ELD 1, ELD 2 and ELD 3 items that were elicited under declarative sentence intonation, and in sentence-medial, pre-focal position (Tödter 1982:66). A second focus on the items of interest as described by Kohler (2001) for this study is not mentioned in Tödter (1982) and remains dubious. If the choice of sentence focus with the main stress occurring after the item of interest is indeed as described in Tödter (1982), a problem arises. The token is then likely to have been produced in an unstressed way (Willkommen 1999:82). This effect has been pointed out by Jessen et al. (1995). Durational differences between tense ELD 2 and ELD 3 vowels on the one hand, and between tense ELD 2 and lax ELD 1 vowels on the other hand are expected to rapidly decrease in pre-focal context. We would, thus, predict only two length degrees to emerge: short vs. long. And this is exactly what Tödter (1982) finds.

Kohler (2001:392) notes that the same elicitation method as for Fintel was implemented for the recordings of the Windbergen, Brarupholz, and Haßmoor dialects. However, we find in the descriptions of the respective studies (Kohler et al. 1984) that only for Haßmoor a bi-focal realization (i.e. stress on the item and the penultimate word) was intended, while for Brarupholz and Windbergen the sentence focus lies only on the respective item. The outcomes are now that two length degrees are obtained for the diphthongs, and three phonetic length degrees are witnessed at least for the mid vowels of Haßmoor and Brarupholz (the open vowels are missing in the surveys). This parallels my recent findings for Kirchwerder, Altenwerder and Alfstedt. The only unexpected finding for the stressed sentence position is that the closed ELD 2 vowels merge durationally with the closed ELD 1 vowels, yielding a binary split. This result diverges fundamentally from the very clearly defined differences between the short vs. long length categories in the recent data of Kirchwerder (duration ratio 1.59), Altenwerder (duration ratio 1.74, and 2.17), and

207 Tödter (1982:66) specifically notes that she instructed the informants to stress the penultimate word of her carrier sentence Dat / de … schall / schütt groot ween. ‘This / these … shall big be.’. This method was supposed to divert the interest from the stimulus and ensure a comparable sentence intonation across all of the recordings.
Alfstedt (duration ratio 1.55). Yet, the data presented in the Schleswig-Holstein studies from the 1980s is not entirely conclusive because the open vowel quality is missing from the samples. The overall impression is therefore that a ternary contrast is a valid option for the dialects of Schleswig-Holstein since two length degrees occur only for the closed vowels.

Kohler’s (2001) conclusion is different, though. Minimal triples for a possible ternary opposition are not available, which is why Kohler deduces that “eine dreistufige Opposition ist heute nur so rudimentär ausgeprägt, daß sie für die sprachliche Kommunikation keine Bedeutung hat […]” (transl.: a three-step opposition of length is of rudimentary status nowadays, and has, thus, no relevance in verbal communication) (Kohler 2001:398f.). A distinct F0 contour on the ELD 3 vowels, viz. a dragging tone, was also not observable in his data (Kohler 2001:397). Kohler therefore assumes a binary rather than a ternary quantity distinction for all four investigated LG dialects of Niedersachsen and Schleswig-Holstein. Instead of the traditionally assumed phonetically long status of the tense ELD 2 vowels, he rather labels them as short, noting that durational differences between short lax vowels and long tense vowels do not reach the JND (Kohler 2001:394). Accordingly, the tense ELD 3 vowels are labeled as long. No analysis is provided for the two occurring length degrees (short vs. long?) in the diphthongs. This length opposition poses an analytical problem in a binary system supposedly contrasting only short vowels vs. long vowels and diphthongs. What to do with the longer diphthongs? This problem adds to the point made in section 2.3.4.2 that Kohler’s denial of a threefold length distinction must occur as questionable against the background of the three durational steps found in the mid vowels of the Haßmoor dialect. The presence of a contrast, even if it does not occur frequently in a language, indicates the presence of a distinction in the speaker’s minds. It is likely to be of phonological relevance.

In addition to the analytical problems, a methodological issue arises for the post-vocalic coda Cs. Instead of comparing the durations of lax vs. tense vowels in identical pre-consonantal context (i.e. only vowels in pre-obstruent context among each other and only vowels in pre-sonorant context among each other) the vowel durations were looked at across all consonant contexts (i.e. lax pre-plosive vs. tense pre-fricative vs. tense pre-sonorant, and so on). This is particularly disadvantageous because phonetic effects of the succeeding C on the nucleus are not controlled for and may very well skew the results. Such influence is clearly visible in the data analyzed in chapter 3 above. We have seen there that a pre-obstruent vowel receives remarkably different (i.e. longer) duration values in ELD 3 in all investigated dialects than a pre-sonorant vowel does. This or similar effects are left untouched by Kohler (2001).

Having made his point for a binary length distinction, Kohler (2001) turns to a diachronic explanation of the quantity contrast. He argues that the source of this opposition is not a matter of CL. Based on the observation that vowels preceding voiced obstruents are in general phonetically longer than vowels preceding voiceless obstruents (Chapman 1993; see also FN 202 above), Kohler (2001:398) states that a difference in vowel length was already present in LG before schwa loss. This
phonetic length contrast in the preceding nucleus was then phonologized by apocope and the following desonorization of the final originally voiced obstruent. His examples of schwa loss yield:

Figure 62. (a) different vowel length:

ELD 3  LG ried [rii]d ‘to ride-1.Sg.Pres.’ < MLG ride vs.
ELD 2  LG rié [rit] ‘to rip-1.Sg.Pres.’ < MLG rite

(b) no effects on vowel length:

ELD 2  LG bliem [bli:mm] ‘to stay-Inf.’ < MLG blîven

The examples in (a) demonstrate the expected development to a phonetically overlong vowel vs. long vowel, whereas (b) is assumed to constitute a counterexample without overlength despite schwa loss after a preceding voiced obstruent. Kohler contends that CL could not have operated in LG since no congruent results emerge with respect to vowel duration in items showing an intervocalic voiced obstruent diachronically. The synchronic result of the originally contextually determined vowel duration differences is then a binary phonological contrast of both, vowel quality and vowel length, rather than a ternary quantity distinction:

Figure 63. /rit/ ‘to ride-1.3.Sg.Past’ with a lax V
/rít/ ‘to rip-1.Sg.Pres.’ with a tense V
/riid/ ‘to ride-1.Sg.Pres.’ with a tense V:

The findings of the LG dialects of Fintel, Brarupholz, Haßmoor, and Windbergen are indeed such that no clear-cut durational difference can be established between the lax V of ELD 1 and the tense V of ELD 2 (Kohler 2001:390). However, due to the methodological weaknesses of the data, the analysis appears as not entirely convincing.

An additional complication for the analysis of Kohler is that he implies a monosyllabic syllable structure for his counterexample in Figure 62 (b) MLG [blîven]. Although schwa is indeed absent in the synchronic LG form, more detailed speech data show that the second syllable is maintained by syllabifying the final nasal into the nucleus.

Prehn (2010) finds in her investigation of word-final long nasals in LG that the long nasals do not show distinct F0 contours in 97.92% of the 96 investigated items. The long nasals of syncopated forms exhibit delayed intensity peaks and sonority peaks as compared to their apocopated correspondents. This points into the direction of a bisyllabic representation of words ending in a nasal geminate that developed by means of syncope. See Kohbrock (1901:24), who points out that it is syllabification of final sonorant consonants after syncope that prevents the development of overlength.

I employ here Hyman’s (1985) approach of associating onsets to the head-mora of the succeeding nucleus.
The syllable is open. The first part of the nasal configuration therefore constitutes the onset of the following syllable. The nucleus of this final syllable is the second part of the nasal configuration.

Figure 64. (a) LG [bliz:fm] ‘to stay’  
(b) LG [kann] ‘jug-Pl.’

A phonological geminate including a final syllabic part can be assumed in cases containing a phonetically short lax V in the nucleus of the initial syllable like in [kann] ‘jug-Pl.’ in Figure 64 (b). This nucleus needs a coda to close the syllable. The short lax [a] of LG [kann] ‘jug-Pl.’ thus requires the following [n] to occupy a position within the initial syllable, i.e. in the coda. Syncope of schwa places the final nasal in the nucleus of the second syllable. In order to also have an onset, an ambisyllabic nasal is created. It builds at the same time the coda of the initial syllable and the onset of the final syllable (more on final sonorant consonants in section 6.2.4).

It is apparent that the word LG [bliz:fm] given in Figure 64 (a) indeed stays bisyllabic. It does not qualify for a change in vowel duration (or pitch contour) since the syllable structure stays intact. Kohler, however, employs bliem as a counterexample against CL-effects based on schwa loss since it is a monosyllable in his view. Basing his arguments on this example effectively weakens his argument.

Another point that requires some attention is the across-the-board conjunction between apocope and overlength implicitly assumed by Kohler. This relation is not applicable to LG. In fact, only (post-)MLG apocope seems to have triggered CL. Apocope that occurred in pre-MLG time did not yield CL. This is illustrated by OSax. sida > MLG süt > LG [zi:t] ‘side’. We see here that a word that was already apocopated in MLG times does not show phonetic overlength in synchronic LG. The OSax. form satisfies the basic requirements of comprising a long vocalic nucleus, a final vowel, and an intervocalic lenis C, but no CL applies. We may conclude that this process occurred later, in the language stage between MLG and LG, and not as a general development.

What Kohler (2001) also leaves open is the stress system of LG and its implications for syllable – and hence vowel – weight. Although he brings forward an analysis of LG vowel quantity, he gives no account of the representations of this quantity in terms of morae, x-slots, or the like.

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211 [kan] ‘jug-Sg.’ is by comparison monosyllabic. Its final geminate nasal is monomoraic and bi-positional, i.e. occupies two segmental slots on the grid (Prehn 2010:202).

212 An alternative possibility is a mono-syllable with a phonological non-syllabic nasal geminate. This is rather problematic since [mm] of LG bliem developed from two independent segments [bm] which in some LG dialects (e.g. Kirchwerder) are still distinct from each other. Furthermore, it does not reflect the phonetic reality particularly well.
Nevertheless, his quantity account paints a correct picture of the LG vowels. It distinguishes vowel quality and vowel quantity at the same time. This approach is inherently different from the proposals made for Standard German and Dutch that relate contrasts in the vowel system either to quantity or to quality, i.e. tense vs. lax (van Oostendorp 1995). Kohler’s postulates may now be used to build a phonologically more refined analysis that also considers the LG stress system, the factual presence of phonetic overlength, and the vowel-consonant interaction regarding syllable weight (i.e. mora association and extrametricality).

5.3.3. The binary approach: upgraded

While Kohler’s (2001) assumptions with respect to the distribution of length on the LG vowels may be correct, his line of reasoning is not entirely conclusive. I will try to bridge the gaps with my synchronic analysis in the upcoming section.

The starting point is the stress system of LG as discussed in chapter 4. We have seen there that the language utilizes a trochaic stress pattern that is to a large extent dependent on syllable weight. Lax ELD 1 vowels count inherently as monomoraic in LG. They cannot occur in open syllables and require a succeeding consonantal coda. This (C)V\textsubscript{lax}C configuration then constitutes a heavy syllable that is able to attract stress in polysyllabic words. The phonetically long tense vowels are equally rendered monomoraic. The lack of the feature [lax] does, however, allow for the absence of the coda position, yielding light CV\textsubscript{tense} syllables that do not attract primary word stress if a CVC syllable is available.\footnote{Kehrein (p.c.) rather assumes that it is the feature [tense] that prohibits coda Cs.}

The specific weight of the phonetically overlong tense vowels was not established so far. What the stress analysis showed is that the LG syllable weight of final syllables can be ranked as follows: CV\textsubscript{tense} < \{CV\textsubscript{lax}C, CV\textsubscript{tense}C\} < CVV\textsubscript{tense}C. The closed CVVC syllables as in [kom\'byyz] ‘caboose-Sg.’ show an ELD 3 vowel or diphthong and appear to count as underlyingly superheavy. They have undergone the same diachronic development (i.e. lengthening after apocope or syncope and reduction of the PrWd by one syllable) as synchronic monosyllabic items containing ELD 3 vowels like [riiz] ‘giant-Sg.’ have. The interference of a lenis C is crucial in these cases. Without it, we end up with an ELD 2 vowel, i.e. a plain long tense vowel or diphthong as in [ku\'jiy\'z] ‘cabin-Sg.’. This is independent of whether the resulting PrWd is mono- or polysyllabic. It is therefore reasonable to assume that the CVVC monosyllables behave identically to the final CVVC syllables in polysyllabic words. Being a superheavy syllable is here obviously interlinked with the ELD 3 status and the consonant quality. But where is the weight located? Is it the phonetically overlong vowel that holds and retains more than one mora, or does the lenis coda attribute to the syllable weight? Thinking back to the stress analysis in section 4.1.2, we can assume that the coda Cs of CVVC syllables are rendered extrasyllabic by virtue of WEAKEDGE. The constraint determines that the right edge of a PrWd should not contain a foot. This leaves the vowel as the location of syllable weight. If we now consider the assumed LG restriction to maximally bimoraic syllables (i.e. MaxBin) while bearing in mind that CVV<C> is
still stress-attracting (i.e. heavy), we arrive at a bimoraic status of the nucleus (see sections 4.1.4 and 4.4). A trimoraic representation of the vowel is neither necessary nor desirable. Ternarity is not needed to distinguish the phonetically long monomoraic vowels from the phonetically overlong vowels. Two morae are sufficient to express phonetic overlength in LG. The absence of true minimal triples due to the perceptually relevant vowel quality differences (lax vs. tense) renders the presence of trimoraic vowels even more unlikely. Thus, we can presume a weight contrast of monomoraic (short) lax vowels vs. monomoraic (long) tense vowels vs. bimoraic (overlong) tense vowels.

Figure 65. LG monophthong weight at the surface level

\[
\begin{array}{ccc}
\mu & \mu & \mu \\
V_{\text{lax}} & V_{\text{tense}} & V_{\text{tense}}
\end{array}
\]

We see that Kohler (2001) analyses correctly the distribution of phonological length in LG monophthongs. The short lax vowels and long tense vowels fall together under the category of monomoraic vowels, while the overlong tense vowels count as bimoraic at the phonological surface level.

Assuming a phonological difference between long and overlong vowels in terms of one mora vs. two morae violates \( V_{\text{mui}} \) given in XXI) above, though. The constraint decisively levels out any weight distinctions between long tense vowels and overlong tense vowels. The reason why a bimoraic output form is still able to emerge in the phonetically overlong cases is that a moraic (allo)morpheme – the originally stem-final schwa (e.g. the original feminine marker, the plural or infinitive marker, and so on) – is included in the input form.\(^{214}\) The schwa was lost historically along with the final syllable, and yielded vowel lengthening if occurring after a preceding voiced consonant. Overlength is, thus, the result of a monomoraic root vowel being enriched with the mora of a (allo)morpheme. \( V_{\text{mui}} \) needs to be ranked below a constraint that preserves this morphemic content present in the input form. **REALIZE MORPHEME (RM)** is just what we are looking for.\(^{215}\)

XXIV) **REALIZE MORPHEME:** For every (allo)morpheme in the input, some phonological element should be present in the output.

Tableau 16 exemplifies the ranking for cases like [riiz] ‘giant-Sg.’ that involve a moraic (allo)morpheme.

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\(^{214}\) I use the term ‘(allo)morpheme’ in the sense of Hammarström (1976:47) for “a set of allomorphs that are similar in regard to their segments”. i.e. in the context of this thesis for all LG schwa-endings.

Tableau 16. [riiz] ‘giant-Sg.’

<table>
<thead>
<tr>
<th>[C V^H C]</th>
<th>RM</th>
<th>*V_{inf}</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) \equiv C V^H C</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(b) C V^H C</td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

We may now obtain by RM > *V_{inf} a bimoraic form whenever a moraic (allo)morpheme occurs – a generalization that is not valid for LG because only voiced obstruents allow this process. This issue will be treated in the following chapter. Let us stick to the analysis at hand for the moment.

Morpheme preservation yields not only minimal pairs like the inflected forms [hus] ‘house-Nom.Sg.’ vs. overlong [hузз] ‘house-Dat.Sg.’, but also a lexical contrasts such as [ris] ‘rice-Sg.’ vs. [riiz] ‘giant-Sg.’. The according Pl. or Dat. forms of ‘giant’ do not exhibit overlength as they are constructed with final -i/th/-i/#, or -i/# respectively. The assumption is such that in some declensions (e.g. the strong a-stems and n-stems) the Nom./Akk.Sg. shows an empty morpheme – a so-called zero-morpheme or Ø-morpheme. This is an ‘invisible’ affix, which basically means that it consists of an empty string of phonological segments. Conversely, the Nom.Sg. morpheme in other noun classes (e.g. the weak n-stems) is filled with a mora, which yields overlength if a voiceless obstruent preceding a historically apocopated schwa is involved. An abbreviated overview of the LG noun classes where a moraic (allo)morpheme occurs is added in appendix (F) (Lasch 1974:191-203).

An example for phonetic overlength of a zero-morpheme in the Nom.Sg. vs. a moraic (allo)morpheme in the Dat.Sg. is the neuter a-stem Huus. The Ø-morpheme is underlyingly attached to the root of the Nom.Sg. form [h u\!_{\text{amus}} z] ‘house-

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216 The presence of a final /e/ in ‘house’ is evidenced by dialects not comprising complete schwa-apocope (e.g. the village of Baden of the district of Verden, Feyer 1941), yielding the Dat.Sg. [hуззa] and the Nom.PI. [hyyzz]. In ‘giant-Nom.Sg.’ it is evidenced by the plural form [riiz] ‘giant-Nom.PI.’.

217 The terminology ‘strong nouns’ and ‘weak nouns’ was introduced first by Jacob Grimm (1822). The so-called ‘strong nouns’ are those nouns that developed historically from Proto-Germanic word classes employing a thematic vowel (also ‘extension vowel’) to form the word stem in conjunction with the word base. In German, these inflectional classes show identical word forms in the nominative and accusative. The genitive ending is -s. The ‘weak nouns’ by comparison had no thematic vowel diachronically, i.e. they are athematic. These nouns show the ending -en in the accusative. See appendix (F) on page 330 for an abbreviated overview of the LG noun-classes.

218 Grimm (1922:54) “Das starke Nomen zeigt im Nominativ und Akkusativ keine Endung, abgesehen von einigen -e- Stämmen, die in A [i.e. Assinghausen / Sauerland] e-Auslaut haben [...]. Das schwache Nomen zeigt in AB [i.e. Assinghausen, and Ostbevern / Niedersachsen] normalerweise als Nominativendung ein e. In DS [i.e. Heide / Dithmarschen, and Stavenhagen / Mecklenburg-Vorpommern] ist dieses e zwar äußerlich verschwunden; es äußert aber seine Nachwirkung a) bei Stämmen, die einfach konsonantisch auslaufen in Überdehnung (D) bzw. Zirkumflaktion des gedehnten Stammpokals (S), b) bei Stämmen, die auf mm, nn oder nd, vo (u), ll oder id auslaufen, in Entwicklung von zirkumflaktionierten m, n, u, l (S).” „An Endungen findet sich [für den Plural]: 1. In der starken Flexion: a) e, das in DS zwar geschwunden, doch durch Überdehnung (D) bzw. Zirkumflaktion (S) von vorhergehender Länge oder m, n, u, l kompensiert ist [...].“
Nom.Sg.’ in Figure 66 (a). The mora (\(\mu\)) of the morpheme of the Dat.Sg. on the other hand is underlyingly associated to the root as shown in Figure 66 (b) [ [ h\(\text{tense}\) z] \(\,^{\nu}\) ] ‘house-Dat.Sg.’.

Figure 66. Structure of ‘house’ in LG

(a) [ C V\(^{\mu}\) C ] \(\,^{\theta}\) ‘house-Nom.Sg.’

(b) [ [ C V\(^{\mu}\) C ] \(\,^{\nu}\) ] ‘house-Dat.Sg.’

The established weight properties of the LG vowels require an adjustment of the phonological transcription. We found that short lax vowels and long tense vowels are both monomoraic, while the overlong tense vowels are bimoraic. The long vowels are sufficiently characterized by their tense quality. The addition of the diachronic length mark ‘\(\,^{\nu}\)’ would even confuse the picture, indicating a phonological heavier status of the phonetically long vowels as compared to the short vowels. We therefore arrive at a revised phonological transcription for the LG long tense vowels, e.g. /huz/ ‘house-Nom.Sg.’ and /ris/ ‘rice’ without the length sign. The phonological transcription of the LG overlong vowels consequently requires only one length mark to distinguish them from the simple long vowels. I choose a notation with a single V and the phonetic length sign, e.g. /huz/ ‘house-Dat.Sg.’ and /riz/ ‘giant-Sg.’.

Now that we have settled the weight distributions in the vowels, let us have a brief look at the diphthong cases. Kohler’s (2001) findings are that two durational degrees apply to all diphthong qualities except for the open-closed /ai/ and /au/. My own results for Kirchwerder, Altenwerder and Alfstedt differ from this outcome (see Table 20 in section 3.6.1.1). It was found that none of the diphthongs in the Kw. minimal pairs reach the JND for their durational differences between ELD 2 and ELD 3. The Aw. group 1 shows a relevant contrast for the mid-mid and open-closed qualities. The mid-closed diphthongs do not reach the JND. All diphthong qualities present in the data of III.6.Aw differ durationally well above the JND. Finally, we see for Alfs. that only the open-closed diphthongs show no relevant difference. Taking the Aw. data as the point of departure we can assume that the durational difference between ELD 2 and ELD 3 is present in all diphthong qualities. Thus, the genuine LG diphthongs (i.e. to the exclusion of ‘fake’ diphthongs formed by V+r) can be divided into two categories: normal diphthongs and long diphthongs. In traditional analysis, this leads to a bimoraic representation of the first and a trimoraic representation of the latter.

Phonetic overlength of the diphthongs would then be represented differently from the phonetic overlength of the monophthongs in terms of mora association. This is rather undesirable. The alternative assumption of a monomoraic status of the normal diphthongs is, however, unusual; especially if we consider that the general finding in the languages of the world is such that falling diphthongs are heavy and, thus, stress-attracting. Yet, this distribution appears not to hold for LG. Similar typological evidence for the monomoraicity of such falling diphthongs comes from
Icelandic. In this North-Germanic language, a condition applies to vowels and diphthongs alike, requiring them to be short before long Cs and clusters, and long before singleton Cs and in open syllables. The short diphthongs are duration-wise equivalent to short vowels, whereas the long diphthongs are equivalent to long vowels, i.e. comprise twice the length of a short vowel or diphthong (Lass 1984:112). This applies in a slightly amended form also to the LG diphthongs. The normal diphthongs are produced only slightly longer than the long monophthongs. The same is true for the overlong monophthongs and the long diphthongs. Overall, it appears to be justified to assume a mora-wise similar analysis for the LG data as for the Icelandic data. We arrive at phonetically long monomoraic diphthongs vs. phonetically overlong bimoraic diphthongs.

A different approach proposed by Heijmans & Gussenhoven (1998) and Heijmans (2003) for the south-eastern Low Franconian dialect of Weert is that the contrast in the diphthongs relies on the segmental structure. They assume that the ‘normal’ diphthongs do not consist of two vocalic parts, but rather feature a sonorous consonantal second component. This consonant is inherently shorter than the preceding vowel. The result is a (C)V(C) structure of the respective syllable and an overall shorter duration as compared to the overlong diphthongs. Following this assumption, the left-hand column in Table 29 would contain those ‘diphthongoids’ with /j/ and /w/ instead of [i] and [u, o]. The moraic structure of this configuration is such that the lax first part receives one mora and the second, i.e. consonantal, portion would also bear a mora. The overlong diphthongs transcribed in the right-hand column of Table 29 have by comparison the structure (C)VV(C). They, too, receive two morae – one on the first vowel and one on the second vowel. However, the diphthongoid approach is rather problematic. An immediate consequence of this analysis is that the dialect of Weert shows segmentally different forms at the underlying level for directly related forms, e.g. /steijn/ ‘stone-Sg.’ versus /stein/ ‘stone-Pl.’. Transferred to LG, the same would be expected in cases like */rajzn/ [raizn] ‘to travel’ versus /raiz/ [raiz] ‘journey-Sg.’. The diachronically apocopated ‘journey-Sg.’ has bimoraic (overlong) VV whereas the non-apocopated ‘to travel’ would have bimoraic VC. An explanation for this is rather hard to come by. An even more serious disadvantage of the diphthongoid account is that the phonetic data of LG lend no support for the consonantal status of the second part of the long diphthongs. Both segments appear to be equally vocalic.

I therefore analyze the normal and the long diphthongs as being monomoraic and bimoraic, respectively. Only the latter are inherently stress-attracting in LG. A difference with respect to the Icelandic short diphthongs is that the LG normal diphthongs may occur in open syllables just like the long tense vowels. This is exemplified by [‘slaidar] ‘centrifuge-Sg.’ that comprises the foot structure (LL)<C>.

The according weight distributions of the LG diphthongs are given below.
Figure 67. LG diphthong weight

\[
\begin{array}{c|c}
\text{normal diphthong} & \text{long diphthong} \\
\hline
\mu & \mu \\
\end{array}
\]

LG monosyllables having a diphthong in the nucleus and a consonant cluster in word-final position lend support for this two-fold weight distinction. Only examples with a normally long diphthong preceding a cluster are available: e.g., [beits] 'cow-Sg.', [meist] 'mostly', [feist] 'party-Sg.', [geist] 'ghost-Sg.', [deinst] 'service-Sg.', [go-domns] 'stuff'; examples of synchronically diphthongized cases are [koult] 'cold', [bump] 'tree-Sg.' and [?auvt] 'fruit'. These diphthongs behave like long tense vowels, being able to occur not only in closed syllables but also in open syllables (e.g., L(L)C → [z'neiva] 'juniper schnapps-Sg.', [ku'taka] 'squirrel-Sg.'). The long diphthongs may by comparison precede at most one (non-suffix) lenis consonant (e.g., [breiv] 'letter-PL.', [meoed] 'fashion'). Following consonant clusters are not possible. This indicates that the long diphthongs occupy more space within a syllable than normal diphthongs, i.e., they are heavier.

The moraic status of the LG vowels is – at least for the ELD 1 vs. ELD 2 cases – in accordance with the system established by van Oostendorp (1995) for Dutch. The distinguishing property is here the presence or absence of the feature [lax]. The LG system as a whole is, however, not sufficiently describable by means of this feature. The existence of the phonetically overlong tense vowels of ELD 3, as well as the two length degrees of the diphthongs require a quantitative addendum to the system. What researchers have strived to achieve for Standard German and Dutch, namely the limitation to only one phonological property in the phonological descriptions (i.e., quantity or quality, not both), is inapplicable to LG. We need the feature [lax] as well as the binary length split in order to properly describe the language.

The two quantitative approaches introduced above are complemented by a tonal approach. It needs mentioning, though, that the length accounts are more in line with the analysis of the LG data given in chapter 3.

5.3.4. The no-length account: a tonal development

The third approach introduced here aims not at the durational differences but rather at the assumed differences in the pitch contours (i.e., TA1 vs. TA2). These have been recurrently described in the older studies on LG (Bremer 1929; von Essen 1958, 1964; etc.), some cues of them were found also in the production data recorded from informant III.6.Aw, and indicated as such in the study of Ruscher (1983:43). Bear in

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219 That the latter example can in fact not be analyzed by means of extrametrical coronal obstruents as suggested among others by van Oostendorp (1995) is shown below in section 6.2.5.2.

220 Note that this is also the case for some Brabant Dutch dialects including the city dialect of Tilburg (van Oostendorp 1995:76ff.). The length contrast short vs. long occurs here in the lax vowels, though. Along the lines of my own analysis, low ranking of the OCP and the resulting possibility of two adjacent identical (lax) segmental positions could provide a possible explanation for this phenomenon.
mind that there is no evidence for the factual presence of differing pitch contours in
the speech samples of Kw., Aw. group 1, and Alfs. Assuming a non-arbitrary relation
between phonetics and phonology, the tonal account remains therefore only
speculative.

The recognizable variances in pitch movement in part of informant III.6.Aw’s
data (see section 3.3.4) could in principle be accounted for by analyzing the
according lexical or grammatical contrast in terms of tones. This is in line with
Ruscher’s (1983), Höder’s (2003), and Ternes’ (2001, 2006) assumptions. Within
this approach, the three durational levels in the vowel system are regarded as
phonetic, leaving only two phonological length degrees, namely short and long. The
increased duration of the phonetically overlong vowels results from the greater
articulatory expense and effort that is necessary to produce an HL contour within the
limited frame of one syllable. Figure 68 shows the prominence related analysis of
the diachronic development of LG ‘giant-Nom.Sg.’.

Figure 68. Prominence related analysis Aw. ‘giant-Nom.Sg.’

The crucial phonological features are the tones H and L, not the mora. We can
assume that a MLG syllable under main stress had an intonational high tone H,
whereas an unstressed syllable or a syllable under secondary stress received an
intonational low tone L%. In the development from MLG to LG, the metrical
contours were phonologized by schwa loss and the devoicing of final voiced
consonants, and became tone accents (Prehn 2007, analogously to Boersma 2006 for
Franconian). Underlyingly voiceless coda consonants in words like MLG
[riz] ‘rice-
Nom.Sg.’ were not able to license tone.

In a first step, the schwa of the unstressed final syllable was deleted, leaving
behind its intonational boundary-tone L% along with its tone bearing unit (TBU),
the mora.\footnote{It might as well have been the case that the head mora of the schwa got lost along with the vocoid. There is no definite way to actually prove that the non-head mora of the nucleus was preserved, rather than deleting it in favor of the head mora of the schwa (that subsequently became the non-head mora of the nucleus). The latter might, however, be the more likely option for it keeps a property of the lost (allo)morpheme in order to maintain a contrast. Additionally, non-head morae are the more probable candidates for deletion as compared to head morae. Anyway, this is besides the point since the analysis here relies on the tonal properties instead of the syllable weight – and the lack of the feature [spread glottis] in -z], would be sufficient to license a tone without being moraic (see with respect to voiced Cs Bradshaw 1999; Yip 2002; Boersma 2006).} The second syllable was lost, and the final _z] adopted the head mora
along with the prominence features of the apocopated schwa. The constraint ALIGN
Tone to Stressed Vocalic Mora in XXV) was violated at this intermediate stage, so that the tone had to spread further to the left in the direction of stress.

XXV) Align Tone to Vocalic \( \mu \): a tone has to be aligned to a vocalic mora and has to have main stress.

The weak (non-head mora) of the nucleus was deleted in favor of the maintained strong mora of the schwa. In a second step towards LG, final devoicing of the (passively voiced) \(-z > -\ddash z\) applied. This devoiced \(-\ddash z\) was not able to bear a tone. Therefore, the HL contour had to be realized solely on the nucleus. The original length of the nucleus was extended to accommodate both tones. The consequences were HL pitch contours combined with phonetically overlong vowels, i.e. the vowels influenced by schwa loss and final devoicing. These tonal movements are referred to as TA2.

Neither the duration nor the pitch contour changed on the long vowels without schwa loss. The assigned tone is referred to as TA1. The overt tonal contour in these cases remained HL, which should have effectively led to a merger with the newly developed TA2 words. Yet, this did not happen. The reason is that at an earlier stage of the language – before the deletion of schwa – prominence tones were assigned to the head mora of each syllable. One H tone was associated with the stressed syllable in the case of the original monosyllables, since there was only one head mora. Nevertheless, an intonational boundary-tone L% was aligned with the right edge of the word. In the case of the bisyllables, however, each of the two head morae received an intonational tone. The stressed position had a H, while the unstressed position (second syllable) had a L%. Schwa loss then led to the removal of the second syllable. This triggered the association of the L% to the preceding voiced obstruent, and the alteration of intonational to phonemic tones. The L then moved further to the left towards the stressed long vowel where it associated with its right edge. This is how a tonal contour HL was established on the new monosyllables. Expansion of the pitch contour of the long vowel resulted in an increase of the vowel’s duration. Phonologically, however, the bimoraic structure stayed intact since both tones were able to associate with one of the two morae of the nucleus.

The original monosyllables by comparison kept their single H tone. The distinction between the two word categories remained since the boundary-tone stayed put. Hence, the contrast of TA1 vs. TA2 is one of a single H + L% versus a contour HL + L%.

The contrast can be analyzed in terms of tone as displayed in Figure 69 (a). The list in (b) contains the resulting dual binary distinction of short lax vowel with no tone, long tense vowel with TA1, and long tense vowel with TA2.

Figure 69. (a) \( \ddash \) (b) /\( r i s / 'r i p - N o m . S g . ' \) /\( r i z / 'r i c e - N o m . S g . ' \) /\( \ddash r i z / 'g i a n t - N o m . S g . \) Ø tone, TA1, TA2
While the H in ‘rice-Nom.Sg.’ is associated to both vocalic morae, the H in ‘giant-Nom.Sg.’ is linked to the first mora and the L to the second mora of the nucleus. The difference between the two items would probably be a single F0 peak in ‘rice-Nom.Sg.’ and a F0 minimum only after the final segment vs. an extended high-low F0 movement on the nucleus of ‘giant-Nom.Sg.’.

The assumption of tones is in line with the well-known phenomenon of blocking of low tone spreading by voiceless consonants:

Figure 70. MLG *ride* vs. *rite*

(a) 
\[
\begin{array}{c}
\text{MLG } \text{ride} \text{ ‘to ride-1.Sg.Pres.’} \\
\text{LG } \text{ried} \text{ [TA2]} \\
\end{array}
\]

(b) 
\[
\begin{array}{c}
\text{MLG } \text{rite} \text{ ‘to rip-1.Sg.Pres.’} \\
\text{LG } \text{riet} \text{ [TA1]} \\
\end{array}
\]

MLG [-t-] is not able to license a tone since it lacks the vocal fold vibration by virtue of the feature [spread glottis] (s.g.). Thus, the L cannot dock onto it, nor spread through it to the preceding stressed syllable. The result is that the pitch contour stays H+L%, i.e. Accent 1.

An advantage of this tonal approach is that MaxBin is not violated since a ternary quantity distinction is no longer needed. The binary distinction of tense vs. lax, and the binary distinction between TA1 and TA2 renders this issue irrelevant.

The tonal contrast of the Hamburg area would mark

XXVI) (a) a grammatical contrast as in ‘house-Nom.Sg.’ [ʰhus]
vs. ‘house-Dat.Sg.’ [ʰhuyz]
(b) a lexical contrast as in ‘bread-Nom.Sg.’ [ʰbrei̯t]
vs. ’to brew-3.Sg.Pres.’ [ʰbrei̯t].

The occurrence of the tone accents is limited to Vᵢ, VᵢVᵡ, and combinations of V+r and V+t in the final syllable (Höder 2003). Due to the complete r-vocalization (in a slightly milder form known from Standard German), the latter cases could also be regarded as diphthongs, as has been pointed out above.

The restriction of TA1 and TA2 to word-final positions is consistent with Zhang’s (2000) phonetically based findings with respect to tonal melody mapping. He emphasizes that tones generally favor closeness to the left edge of a prosodic word “for the ease of processing, but contour tones can only occur on the final syllable.
because of its extended duration” (Zhang 2000:608). Although in LG TA1 is theoretically defensible on non-final syllables, there is no contrast in this position, since TA2 occurs in word-final position only. The two LG tone accents are not contrastive on short – i.e. monomoraic – vowels, or in unstressed position.

Unfortunately, the assumption of a tonal contrast is not borne out by the speech data of Kirchwerder, Altenwerder group 1, and Alfstedt, as was pointed out earlier. It is only the motherese informant III.6.Aw who exhibits phonetic cues on the presence of differing pitch contours in ELD 2 as opposed to ELD 3. Yet, these indications are mere trends and do not reach significance. We have seen in chapter 3 that there is basically no reason to assume the presence of a tonal contrast TA1 vs. TA2 on the grounds of F0 variances or the perception of such differences in the synchronic LG of the investigated informants. This weakens the tonal account we just developed. Considering the phonetics to be (at least partly) an indication for phonological structure, the quantity account appears to be the more likely analysis for the LG data of Kirchwerder, Altenwerder, and Alfstedt.

5.4. Conclusions on LG vowels

It is evident from the discussion that a binary analysis of the vocalic overlength observed in the LG dialects of Kirchwerder, Altenwerder, and Alfstedt is best suited to describe the phonetic data. What we find is a combination of a quality contrast lax vs. tense with a quantity contrast short (i.e. monomoraic) vs. long (i.e. bimoraic). This surface contrast is, at least with respect to the weight distinction, not reflected in the underlying form. At this level of representation, all vowels are rendered monomoraic. The second mora of the phonetically overlong vowels is assigned at the surface level by means of the moraic (allo)morpheme.

We now move on the analysis of the LG consonant system, the employed laryngeal features and the discussion of the arguably present fortis vs. lenis contrast that determines the occurrence of the phonetically overlong vowels.

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222 The argument is, however, somewhat weakened for LG by the fact that no utterance-final lengthening was found for the investigated varieties of Aw. and Alfs. Only the Kw. data displayed cues for this process.