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

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The previous chapter dealt extensively with the production and perception data elicited from the LG research area. We now move on to the description of the phonological correlate of phonetic prominence, and investigate the structure of main stressed feet in LG. Compound and phrasal stress is not considered in the analysis, and secondary stress only where necessary. The LG stress system is worth noting since it allows us to draw first conclusions with regards to weight distinctions within the language system.

I am assuming here the general violability of the Strict Layer Hypothesis (SLH), i.e. weak layering. Thus, each element of the prosodic hierarchy mentioned in section 2.1 and slightly simplified in Figure 44 does not have to be dominated by an element at the immediately following higher level of the hierarchy.

An effect of this weak layering is that e.g. syllables do not necessarily have to be footed, and segments may be extrasyllabic. The basic prosodic structure of a PrWd if strictly following the SLH can be exemplified as follows.

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114 The term ‘stress’ is used here in the sense of Hayes (1995:8), i.e. as “the linguistic manifestation of rhythmic structure. That is, in stress languages, every utterance has a rhythmic structure which serves as an organizing framework for that utterance’s phonological and phonetic realization.” Possible phonetic correlates of stress are duration, intensity, loudness, pitch or clarity (Apoussidou 2007:10, FN 8).

115 The prosodic hierarchy has been proposed among others by Selkirk (1984, 1995), Nespor & Vogel (1986), McCarthy & Prince (1995a).

116 The subscript s and w mark strong and weak syllables or parts of syllables, respectively. I adopt Hyman’s (1985) approach of associating onsets to the (strong) head-mora of the succeeding nucleus. The main argument for such a structure is that onsets are not able to trigger CL (compensatory lengthening) in LG and therefore need to be represented differently from codas (but see Kavitskaya 2002 on onset-CL in Samothraki Greek).
These tree structures are relevant with regard to word stress insofar as the branchingness of the syllable determines the syllable weight and thus the stress assignment. This effectively means that the more morae are attached to a syllable, the more likely it is to attract stress. The syllable weight ultimately points to the weight of vocalic and consonantal segments, i.e. their moraic status.

I argue that the LG primary word stress patterns similar to Dutch and Standard German primary stress. The foot structure is a generalized trochee as defined by Hayes (1991, 1995). The foot is preferably bisyllabic, else bimoraic (i.e. LL or H). Stress in LG is assigned within the ‘three syllable window’. This means that the stressed syllable must be one of the three last syllables in a PrWd. Within this window, stress occurs according to the language-specific stress pattern. The findings for LG are such that superheavy syllables (i.e. syllables with more than two positions) receive stress even in final position. If the final syllable is not heavy at the surface level, trochaic stress is assigned generally to the rightmost non-final heavy syllable or else to the rightmost non-final sequence of two light syllables. Syllables containing a schwa in the nucleus remain unstressed at all times. Stress in loanwords differs from this pattern by means of lexically pre-determined stress markings. To develop this stress system, the subsequent discussion of primary word stress crucially revolves around the following syllable types:

1) non-final stress in CV.CVC.CVC / CVC.CV.CVC / CVC.CVC.CVC,
2) final stress in CV.CVVC / CV.CVCC,
3) non-final stress in CV.CaC,
4) deviant loanword stress.

The structural (metrical) constraints called on within the following analysis refer to the phonological surface form. This term applies to “the discrete representation of the phonological surface structure and consists of prosodic elements (feet, syllables, segments) and phonological substance (features, autosegments)” (Boersma 2007a:2). This is basically the output of the grammar and is generated by the interaction of markedness constraints, faithfulness constraints andmetrical constraints. The accordingly produced prosodic elements such as feet (i.e. hidden structures that contain one stressed syllable) are required to determine e.g. the stress assignment in a number of languages. Apoussidou (2007:14).

The stress system provides evidence for the specific syllable weight of CVC syllables, CV syllables, CV₁V₁C syllables and CVCC syllables in LG. In the following sections I show that they count as being heavy, light, heavy and heavy, respectively.

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117 With L representing in this connection a light syllable, and H representing a heavy syllable. The head of the foot (i.e. stress) is marked by bold face. Note that the mora is a unit of syllable weight and thus relates to phonological structure. However, it is not necessarily directly reflected on the overt phonetic level (e.g. in the actual duration of a sound).
4.1. Polysyllabic stress in LG

The Low German Grammar by Lindow et al. (1998:30) states that LG stress is generally assigned to the initial syllable of a word. Table 21 shows examples of such stressing. The prominent initial syllable in these cases is a closed syllable with a short lax vowel. The presented pattern is such that rather than stressing a final CVC or CV, the penultimate CVC receives prominence. This is especially interesting since it is not immediately evident why final CVC syllables should be less stress-attracting than non-final CVCs. Both can contain a monomoraic lax vowel with a succeeding, equally monomoraic C. Moraic onsets do not exist in LG, which is why heavy syllables are automatically maximally bimoraic.

Table 21. Word-initial stress in LG

<table>
<thead>
<tr>
<th>(a) CVC.CV</th>
<th>(b) CVC.CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘daughter-Sg.’ [dɔxta]</td>
<td>‘very’ [bnʌmc]</td>
</tr>
<tr>
<td>‘altar-Sg.’ [ʔaltu]</td>
<td>‘breathless’ [dampic]</td>
</tr>
<tr>
<td>‘coffee-Sg.’ [kafɪx]</td>
<td>‘carnival-Sg.’ [fasim]</td>
</tr>
<tr>
<td>’work-Sg.’ [ʔəbid]</td>
<td>‘bottle-Sg.’ [budbo]</td>
</tr>
</tbody>
</table>

I argue in the following section that the main stress pattern in LG polysyllables is not initial stress, but rather CVC.CV.CV(C) vs. CVC.CVC.CV(C), where the bold face marks the stressed syllable nucleus. The vowel of the closed non-final CVC syllables may only be lax. The open syllables CV may contain either a tense vowel (traditionally interpreted as being long) or a diphthong and count indeed as light with respect to syllable weight.

4.1.1. Non-final stress

The traditional Dutch and Standard German approaches assign a bimoraic status to open syllables and, thus, to tense (long) vowels. This is based on the observation that

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119 The main part of the data is taken from Lindow (1984) and Niekerken (1935). A broad transcription is added in square brackets. A description of the LG vowel system and the LG consonant system follows in chapters 5 and 6, respectively.

120 Trisyllabic cases like [sʋin nekt] ‘hedgehog-Sg.’ with initial stress are old compounds. This example consists of Swin ‘pig’ and Egel ‘hedgehog’ documented already in MLG as swĩnigel (Lübben 1965). The syllable boundaries as defined by LG informants seem to indicate that the word is on the verge to lose its compound status in its contemporary form.

121 I argue below in section 4.1.4 that CVC syllables with a tense bimoraic vowel do not count as trimoraic (superheavy) in LG. The final C has no mora in these cases.

122 The discussion of ambisyllabic given in Germanic languages is a long standing one. It is a classical chicken-egg-question. What determines what? Does the lax vowel quality demand ambisyllabic behavior of a succeeding C, or does the ambisyllabic quality of the C necessitate laxness of a preceding V? The ambisyllabic of fortis Cs like [f] in polysyllables such as ‘coffee-Sg.’ is not per se phonetically determined. I rather assume that it is structurally required by the preceding lax V. This structure becomes evident if not a homorganic structural geminate follows the lax vowel, but a hetero-organic cluster, e.g. ‘to galumph-Inf.’ [klʌ/bastem], or ‘satchel-Nom.Sg.’ [ˈsʌtʃel].

123 Note that tense vowels are produced phonetically shorter in pre-stress position than in stressed / post-stress position where they tend to receive long duration.
tense vowels behave generally differently from the lax vowels in not requiring a coda C to close the syllable. They create a branching nucleus by occupying two segmental slots and/or two moraic positions. Yet, is this really true? If we look at the polysyllabic forms in Table 22 (a) to (f), this interpretation becomes shaky. The main stressed syllable is in all of the cases CVC, even if a non-final CV syllable is available.

Table 22. CVC stress in LG\textsuperscript{124}

<table>
<thead>
<tr>
<th>(a) CV.CVC.CV</th>
<th>(b) CV.CVC.CV.C</th>
<th>(c) CV.CVC.CV.CV\textsuperscript{126}</th>
<th>(d) CVC.CVC.CV</th>
<th>(e) CVC.CVC.CV</th>
<th>(f) CVC.CVC.CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘porch-Sg.’</td>
<td>[ve‘randa]</td>
<td>'Valhalla'</td>
<td>[val’halla]</td>
<td>‘eskimo’</td>
<td>[ʔeskimou]</td>
</tr>
<tr>
<td>‘headmaster-Sg.’</td>
<td>[dr‘ekta]</td>
<td>‘chinchilla-Sg.’</td>
<td>[tʃin’ʃilla]</td>
<td>‘albatross-Sg.’</td>
<td>[ʔalbatrɔs]</td>
</tr>
<tr>
<td>‘calender-Sg.’</td>
<td>[ku‘lɛnna]</td>
<td>‘confetti’</td>
<td>[kɔn’tɛtti]</td>
<td>‘alcohol-Sg.’</td>
<td>[ʔalkhoʊl]</td>
</tr>
<tr>
<td>‘alabaster marble-Sg.’</td>
<td>[ru’balsta]</td>
<td>‘trouble-Sg.’</td>
<td>[mo’tɹɑnt]</td>
<td>‘calcium-Sg.’</td>
<td>[kaltsiˈjoʊm]</td>
</tr>
<tr>
<td>‘butterfly-Sg.’</td>
<td>[fl’lappa]</td>
<td>‘rabbit-Sg.’</td>
<td>[ko’nɪŋkan]</td>
<td>‘lexicon-Sg.’</td>
<td>[lɛksɪˈkoʊn]</td>
</tr>
<tr>
<td>‘orange-Sg.’</td>
<td>[ɾo’ranɡə]</td>
<td>‘plight-Sg.’</td>
<td>[be’drʊɫʊ]</td>
<td>‘nightingale-Sg.’</td>
<td>[nætɪˈɡeɪl]</td>
</tr>
<tr>
<td>‘inconvenience-Sg.’</td>
<td>[mo’lɛʃʊʃ]</td>
<td>‘inconvenience-Sg.’</td>
<td>[mo’lɛʃʊʃ]</td>
<td>‘alcove-Sg.’</td>
<td>[ʔalkoʊfɛŋ]</td>
</tr>
</tbody>
</table>

The examples in (a) and (b) show penultimate stress on a CVC syllable. In both cases, stressing the CVC is preferred above stressing an open syllable in initial position or in final position.\textsuperscript{127}

\textsuperscript{124} CV(C).CV.CVC words like [ɡɔ’neɪva] ‘juniper schnapps-Sg.’ and [kə’taɪka] ‘squirrel-Sg.’ (with overt complete r-vocalization in the ultima) have the structure L(LLL)-C-. Stressing the diphthong does in these cases not allude to heavy weight. The diphthongs are analyzed in a similar manner as Icelandic short and long diphthongs (Lass 1984). We essentially find phonetically normally long monomoraic diphthongs vs. phonetically overlong bimoraic diphthongs (more on the diphthongs in section 5.1.2).

\textsuperscript{125} But: ‘darkness’ [dvsp(elm)]. The suffix -nis is invisible to stress assignment like most LG suffixes. Word stress is therefore realized according to the stress pattern of the original adjective [dvsp] ‘dusky’ on the initial syllable.

\textsuperscript{126} Note that most of these words show stressed CVC syllables only under the assumption of phonological ambisyllabicity (Wolfgang Kehrein p.c.).
The tokens of (c) and (d) also exhibit penultimate stress. The decision is here made between the closed initial syllable and the closed penultimate syllable. The final syllable again plays no role with respect to stress assignment. Its status as a CVC syllable or a CV syllable appears to be irrelevant in this connection. Additionally, there appears to be no distinction between closed finals containing a full vowel (e.g. [pɛntɛnɪn] ‘boat cover-Sg.’) vs. closed finals containing a schwa in the nucleus (e.g. [pæntɛffɔls] ‘slipper-Sg.’). They are unstressed in either of the two cases.

The examples given in (e) and (f) bear stress on the rightmost non-final CVC syllable, i.e. the antepenult. The penult is in both word groups CV. The final syllable appears to have no influence on the stress placement like in the examples (a) to (d). Again, the vowel quality of the final syllable is irrelevant with respect to syllable weight.

All items presented in Table 21 and Table 22 have in common that the final syllable is ignored by stress regardless of whether it is (C)V, (C)V(C) or CaC. Adding inflectional morphemes at the right word edge (e.g. [pɛnˈɛnɪns] ‘boat cover-PL.’, [kʊˈtɛffɔls] ‘potatoes-PL., [ˈfælsɔms] ‘carnival-PL.’) does not yield any difference in stress assignment.

A further similarity between the examples given in Table 22 is that in all cases stress emerges on the non-final CVC syllable independent of the structure of the ultima. If ultima and penultima are CVC as in (d), penultimate stress wins. The generalization is here that the first CVC syllable from the right receives stress to the exclusion of the final syllable (extrametricality). The items given in (a), (b), (e) and (f) additionally show that LG CVC syllables are more likely to attract stress than CV syllables. If the penult is CVC and the antepenult CV, stress occurs on the former; if the penult is CV and the antepenult is CVC, stress surfaces on the latter. The CV syllables, thus, appear to not attract stress, whereas the CVCs do. This leads to the conclusion that non-final (C)V(C) in LG is heavier than non-final (C)V. We can therefore assume that (C)V(C) syllables are generally bimoraic, and (C)V syllables are generally monomoraic, if occurring in non-final position within a PrWd. This is crucially different from the traditional approach of a bimoraic status of such open syllables, and, thus, a bimoraic status of the phonetically long tense vowels.

The examples given above demonstrate that LG primary stress – just like Dutch or Standard German primary stress – is introduced from the right edge of the word. So far, we may assume that the domain-final syllable is ignored by stress if it is CV, CaC or CVC. The weight distinction light vs. heavy fails to apply in this position.

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127 The items in Table 22 (b) show one peculiarity. All of them have a schwa in the final CVC syllable. One could assume on the basis of such items that schwa never receives stress in LG and that this is the reason for stress to fall on the penult – an observation also made for Standard German (Féry 1996, Wiese 1996), and Dutch (van Oostendorp 1995; besides many others). This could also be valid for the assignment of secondary stress in items like [ˈALKOʃI] ‘alkove-Sg.’ of Table 22 (f) that receive secondary stress on the penult instead of the ultima. The behavior of schwa could be expressed in terms of the markedness constraint NON-HEAD(s): Schwa cannot appear in the head of a foot (Cohn & McCarthy 1998). The constraint, however, does not crucially affect the stress pattern of the polysyllables given in Table 22. Even the cases with a full vowel in the final CVC syllable do not receive ultimate stress. It is therefore not necessary to employ NON-HEAD(s) for the purposes of this thesis.
All three syllable types are skipped.\textsuperscript{128} The presence of a schwa as compared to a full vowel in the nucleus of the final syllable does not yield a difference.

The penult ultimately decides on the stress placement. Stress on the initial syllable is only allowed if the penult is light. Otherwise, stress surfaces on the penultimate syllable. The overall stress pattern appears to be trochaic and sensitive to syllable weight.

There are exceptions to this pattern; namely words ending in superheavy syllables, and loanwords. The analyses of these items follow in section 4.1.4 and section 4.3.

4.1.2. Constraints on LG word stress

In this sub-section I develop the ranking of the structural constraints involved in the metrical phenomena of LG. The primary word stress illustrated above is predictable by means of syllable weight of the penult. LG – much like Dutch – is characterized by a strong tendency to avoid stress assignment to the final syllable. The ultima might be thought of as being invisible to stress. This is not entirely true as will become clear in connection with the superheavy final syllables, though (see Table 23 on page 142). The final position is just prosodically weak. A way to express this is the constraint schema of \textit{WEAKEDGE (P-CAT)}.\textsuperscript{129}

I) \textit{WEAKEDGE (P-CAT):} The right edge of a P-CAT should be empty (Spaelti 2002:10).

Emptiness in the sense of Spaelti (2002) refers to having the least amount of prosodic structure that is possible in a certain position in a PrWd. The respective position can be described as structurally weak, one effect being a preference of configurations that are equally low on structure.\textsuperscript{130} For Spaelti (2002:31), \textit{WEAKEDGE} enforces extrametrical behavior of word-final constituents (prosodic categories). He postulates the following definition of the right word edge as a prerequisite to formulate \textit{WEAKEDGE} (Spaelti 2002:10): “Def: the Right Periphery of node \( n \) is the set of all nodes \( m \) such that \( n \) dominates \( m \), and there is no node \( m' \) such that \( n \) dominates \( m' \), and \( m \) precedes \( m' \).” Spaelti uses the terms ‘right edge’ and ‘right periphery’ synonymously.

Constraint I) as intended by Spaelti (2002) can be seen as a conflation of a bundle of wellformedness constraints aiming at specific prosodic categories of the prosodic hierarchy, i.e. the foot level, the syllable level, the mora level etc. The target of this constraint family is always the right edge of the PrWd. Spaelti employs a constraint \textit{WEAKEDGE (PrWd)} to ensure consonant \textit{extrasyllabicity} (not \textit{extrametricality} as he notes) in word-final closed syllables. It is assumed to render a word-final C non-moraic, unsyllabified and unfooted. Only the association to the

\textsuperscript{128} See Youssef (2004) on Cairene Arabic.

\textsuperscript{129} P-CAT denotes any prosodic category of the prosodic hierarchy mentioned in section 2.1. Spaelti (2002:10) states that “specific constraints can be obtained by providing a specific prosodic category for the argument P-CAT.”

\textsuperscript{130} See chapter 6.2.2.
PrWd-node remains. I will explain the difference between extrametricality and extrasyllabicly more elaborately below.

In the context of this thesis, ‘Extrametricality’ denotes the skipping of the subsequent level in the prosodic hierarchy and associating e.g. segments directly to the syllable instead of associating them to morae. Extrametrical consonants may still be syllabified and footed (also in an extrametrical foot), though they are not moraic. Such a structure is illustrated in Figure 46 [kɔmˈbyyz] ‘caboose-Sg.’ of Table 23 (c). We observe that the final [z] is linked to the syllable without being connected to a mora. All other segments are exhaustively parsed by morae. We may therefore say that the final extrametrical (C) is at best ‘partially empty’ for being non-moraic while at the same time being connected to syllable structure and foot structure. It is not ‘empty’ in the sense of Spaelti (2002). In effect, WEAKEDGE (PrWd) would be violated by the structure in Figure 46.

Figure 46

‘Extrasyllabicity’ by comparison means parsing segmental or moraic content neither into the syllable nor into the foot (Hayes 1995:106f.; Watson 2002:92f.). Extrasyllabic consonants are associated directly to the PrWd-node and exist therefore at the very periphery of the PrWd. They are truly ‘empty’ in the sense of Spaelti (2002). Figure 47 [kɔmˈbyyz] ‘caboose-Sg.’ demonstrates such a structure of the final [z]. The preceding (CVV) sequence is properly syllabified and footed. An additional property of the extrasyllabic final <C> is that it does not permit foot extrametricality. This finding is based on the peripherality condition on extrametricality introduced by Hayes (1981) and formulated as follows by Hayes (1995:57): “A constituent may be extrametrical only if it is at a designated edge (left or right) of its domain.”

Figure 47

The foot (CVV) in Figure 47 is not located at the right edge of the PrWd and is therefore not peripheral. Considering Hayes’ (1981) peripherality condition, the foot

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131 The bracketing denotes the following: ( ) mark extrametrical structure that does not adhere to the prosodic hierarchy, < > mark segmental content that is extrasyllabic, i.e. associates directly to the PrWd-node, [ ] mark footing, [ ] mark the phonetic output. ‘.’ indicates a syllable boundary.

132 Another possibility is to assume a degenerate syllable containing the final C (Kager 1995:376).
may not be extrametrical.\textsuperscript{133} The extrasyllabic final $<C>$ occupies the right word edge, a position that now contains the least possible amount of prosodic structure. The structure in Figure 47 is consequently most harmonic with respect to \textsc{WeakEdge} (PrWd). An interesting property further discussed in 6.2.2 is that extrasyllabic final consonants open up the possibility of tense vowel lengthening in the syllable preceding the extrasyllabic segment (Spaelti 2002:9, 15).

Spaelti asserts that the \textsc{WeakEdge}-family crucially refers to \textit{prosodic} structure (Spaelti 2002:11). Unparsed elements (e.g. syllables, morae), i.e. elements that are not associated to any prosodic node, are invisible to prosody. A final segment that is not even parsed into the PrWd-node (\(\omega\)-node) does not structurally belong to the PrWd and hence the prosodic structure. Idsardi (1998:52), referring to the principle of containment introduced by Prince & Smolensky (1993/2002), notes that the "idea is that in order to be pronounced, a node or segment must be linked into higher prosodic structure (parsed). Any unparsed material is left unpronounced and then does not appear phonetically."

Such unparsing of a segment is illustrated in Figure 48 where the final [z] remains entirely unassociated to prosodic structure and is therefore excluded from the phonetic realization. It does not constitute the right edge of the PrWd – this position is occupied by the (CVV) sequence, which is exhaustively parsed by prosodic structure. Figure 48 does therefore not satisfy \textsc{WeakEdge} (PrWd).\textsuperscript{134}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure48.png}
\caption{Figure 48}
\end{figure}

The notion of weak right word edges is intuitively quite appealing for LG, especially when we think of phenomena such as final devoicing, vowel reduction or deletion. Another possibility would be, however, to assume instead of \textsc{WeakEdge} (PrWd) the constraint \textsc{NonFinality}.

\begin{enumerate}
\item \textbf{NonFinality:} No head of PrWd is final in PrWd.\textsuperscript{135}
\end{enumerate}

This constraint is as Spaelti (2002:10) notes “essentially the statement of an observation”.\textsuperscript{136} Relevant to my analysis are the different notions of the two

\textsuperscript{133} Hayes (1995:107) additionally states that “extrametricality does not chain; i.e., a constituent followed by an extrametrical constituent is not counted as peripheral.”

\textsuperscript{134} In fact, none of the possible \textsc{WeakEdge} constraints referring to the prosodic hierarchy is satisfied by unparsing the final C.

\textsuperscript{135} See among many others Prince & Smolensky 1993; Hung 1994; Kager 1995.

\textsuperscript{136} He also postulates in his discussion of the dialect of Glarnertüütisch that “\textsc{NonFinality} can be seen to be a special case of \textsc{WeakEdge}” (Spaelti 2002:10).
constraints, NONFINALITY focuses on the position of stressed feet without making any (direct or indirect) reference towards a possibly different behavior of qualitatively differing final segments or towards the characteristics of word edges. WEAKEDGE (PrWd) defines by comparison the properties of word edges as preferring to be structurally low equipped. With this, the latter constraint refers not only to feet or syllables but also to segments occurring at word edges. Differences in the structure of these segments, be it in the prosodic structure or in the laryngeal structure, are recognized. This means that an extrasyllabic segment is preferred over an extrametrical or exhaustively parsed segment, and that this extrasyllabic segment should contain the least amount of laryngeal structure. I will argue later in chapter 6.2.2 that lenis consonants have indeed less laryngeal structure than fortis consonants and sonorant consonants in LG. Output forms having an extrasyllabic lenis consonant in word-final position are therefore the most harmonic with respect to WEAKEDGE (PrWd). Even stronger, we will see that extrasyllabicity of the final C may be prohibited by fortis Cs and sonorant Cs in section 4.1.4 and in the discussion of LG vowels and consonants in chapters 5 and 6.\footnote{LG actually constitutes a kind of language not considered in Hayes’ (1995) extensive work on metrical stress patterns in the languages of the world: a language where the quality of the consonant contributes to its specific weight.} I will argue that these consonants are inherently moraic and contain laryngeally complex structure, thus not being able to satisfy WEAKEDGE (PrWd) neither on the prosodic level nor on the laryngeal level.

Summing up, the constraint NONFINALITY is, though independently attested for several languages, not best suited to describe LG edge constituents. I therefore stick with Spaelti’s (2002) more general concept of weak word edges.

The rather broad scope of WEAKEDGE (PrWd) is somewhat disadvantageous, though. The constraint aims at banishing all structures from occurring at the word edge. It so happens, however, that there are words in LG that end in an open CV syllable (e.g. [kəlfə] ‘coffee-Sg.’). Without a final C, it is not possible to assume an extrasyllabic status of the final segment here because only consonants can occur outside of a syllable. We thus find that the final syllable may be in these cases extrametrical at best. WEAKEDGE (PrWd) is too strong a claim for LG. I therefore rephrase the constraint WEAKEDGE (PrWd) as III) WEAKEDGE (\(\omega, \phi\)) (subsequently termed WEAKEDGE).

### III) WEAKEDGE (\(\omega, \phi\)): The right edge of a PrWd should contain no foot.

This constraint is similar to NONFINALITY; only the notion of weak word edges is added to it. By means of rephrased WEAKEDGE, erecting a metrical foot in word-final position is essentially prohibited. If syllabic content (or a single segment) is parsed, i.e. footed, at the right word edge this constraint is violated. I agree with Youssef’s (2004:7) interpretation that the parsing of segmental structure only into the \(\omega\)-node, as seen in Figure 47, inflicts no violation of WEAKEDGE. This is different from Spaelti (2002:11f.) who assumes that extrasyllabic configurations
cause one violation of WEAKEDGE. The reason why I am diverting from Spaelti’s assumption is that it is necessary to associate a segment to the ω-node in order to ensure its phonetic realization; leaving a segment completely unparsed means leaving it unpronounced. Extrametrical, i.e. partially empty segments, as shown in Figure 46, do not satisfy WEAKEDGE because they are parsed not only into the ω-node but also into the φ-node or the σ-node. They employ more prosodic structure than extrasyllabic segments.

The final syllable may, however, resist under certain circumstances the pressure to become extrametrical, i.e. it may be footed. The conditions are as follows:

IV) The final syllable is ‘superheavy’, i.e. ternary at some level of representation (segment).

V) The PrWd is maximally mono-syllabic.

Crucial to my analysis is the following claim.

Only if one of the conditions in IV) or V) is satisfied, the final C is targeted by WEAKEDGE and strict prosodic layering (Selkirk 1984, 1995; Nespor & Vogel 1986; etc.) may be violated.

The weight condition in IV) relies essentially on the undominated SUPERHEAVY-TO-STRESS PRINCIPLE (SHSP) that is part of GEN:

VI) SUPERHEAVY-TO-STRESS PRINCIPLE (SHSP): Superheavy syllables are stressed (van Oostendorp 2002:212; Gussenhoven 2009:193).

These hypercharacterized syllables are well-known to occur across languages (e.g. Germanic languages, Hungarian, Estonian, Arabic, Hindi, Japanese, Mixe-Zoquean, among many others), and generally stand in domain-final position. The reason for this particularly restricted occurrence is likely to be that it is only this position where extrametrical or extrasyllabic final Cs are possible.

The mono-syllabic condition in V) is based upon the equally GEN-inherent principle of Non-Exhaustivity:

VII) Non-Exhaustivity: Extrametricality is blocked if it would render the entire stress-domain extrametrical (Hayes 1995:58).

138 Spaelti (2002:11) asserts that WEAKEDGE is a case of Hierarchical Minimal Violation. Every piece of structure occurring at the right periphery of a PrWd causes a violation of the constraint.

139 Hagberg (2006:7). I assume that the syllable is not necessarily trimoraic at the surface level in order to be ‘superheavy’. Rather, its underlying representation contains three (or more) segments in the syllable rhyme. This assumption relates directly to the extrasyllabicity of the final C, i.e. it being not in coda position in the surface representation.

140 As we will see below, one more condition yields extrasyllabic final Cs. The need for trochaic structure overrides syllable-extrametricality and gives (LL)-<C> in CV/CaC cases.

141 This can basically be seen as a sister-constraint to WSP given in XII) below.

142 This relates back to the assumption that LexWord ∗ PrWd (Prince & Smolensky 1993).
This basically means that the single syllable in mono-syllabic PrWds cannot be left unfooted. What happens is that a final C finds itself relocated to the periphery of the PrWd, outside of the final syllable and the metrical foot. It is not the syllable that occurs at the right word edge but the single C. WEAKEDGE thus remains unviolated also in these cases where the final C associates directly to the o-node.

WEAKEDGE focuses explicitly on the right margin of every PrWd. It does not operate word-internally. This is demonstrated by the stress assignment to word-internal CVC syllables. Examples are polysyllabic words containing consonant clusters (e.g. LG [zep'temba] ‘september’, [di'rekta] ‘headmaster-Sg.’), and old loanwords containing original lenis geminates (e.g. LG [me'schugga] ‘crazy’ < Jiddish meschugga, [budd] ‘bottle-Nom.Sg.’ < OFrench bouteille).

The constraint family PARSE works contrary to III). It equally refers to the prosodic hierarchy and therefore the SLH (Strict Layer Hypothesis). PARSE is constituted by a number of sub-constraints that demand that every element of P-Cat\textsubscript{m} must be dominated by an element of a higher prosodic level P-Cat\textsubscript{n}. P-Cat\textsubscript{n} preferably belongs to the level immediately succeeding P-Cat\textsubscript{m} in the prosodic hierarchy. I assume with Spaelti (2002:12) that the ordering of the PARSE-constraints is language-specific, resulting in LG, just like in the Swiss German dialect Glarnertüütsch (Spaelti 2002:13), in high ranked PARSE (µ) and low ranked PARSE (Σ) and PARSE (ø).

VIII) PARSE (ø): All syllables are parsed into feet.
IX) PARSE (µ): All morae are parsed into syllables.
X) PARSE (Σ): All segments are parsed into syllables.

The constraints do not completely adhere to strict layering. On the one hand, segments do not have to be licensed by morae (McCarthy 2008:180); on the other hand, the association of a mora to a segment is not considered to violate PARSE (Σ).

Constraint VIII) keeps syllables from being associated directly to the o-node rather than being incorporated into feet.

Constraint IX) prevents the occurrence of floating morae in the output form. Candidates that attach morae to the o-node by skipping the φ-level and the α-level in the prosodic hierarchy are penalized. Every mora of the output that is left unparsed causes one violation of PARSE (µ). This constraint is, however, not immediately relevant to the LG stress system, which is why it is omitted in the according tableaux.

Constraint X) crucially opposes the notion of extrametrical segments. Candidates that attach segments (note: not morae) directly to the o-node by skipping the φ-level and the α-level are dispreferred. For every element of the Σ-level that does not obey PARSE (Σ), one violation mark is inserted.

143 Prince & Smolensky (1993); McCarthy & Prince (1993); Kager (1999).
Another opponent of \textsc{WeakEdge} in the prosodic system of LG is \textsc{Rightmost} (Prince \& Smolensky 1993; Kager 1999:167; Ussishkin 2000:66). This constraint counteracts the urge to leave the final position unfooted and devoid of any structure.

XI) \textsc{Rightmost}: The right edge of the head foot is aligned with the right edge of the PrWd.

It requires that the head foot is rightmost within a PrWd. \textsc{Rightmost} (further on \textsc{Righttm}) applies gradually and receives one violation mark for every syllable that succeeds the head foot to the right. This is true for footed syllables and unfooted syllables alike. Also, one violation is inflicted if extrametrical or extrasyllabic material (i.e. an extra position on the grid) is aligned with the right word edge. The reason is that such elements are unfooted – the head foot is, again, not in the rightmost position. The overall result is such that if \textsc{Righttm} >> \textsc{WeakEdge}, stress is assigned to the final position or to the penultimate position in a PrWd, depending on the foot structure; a foot (H) yields final stress, a foot (LL) or (HL) naturally yields penultimate stress.

I will argue in the following that the ranking of \textsc{WeakEdge} >> \textsc{Righttm} applies to LG. CVC.CVC bisyllables such as [‘ban\textsuperscript{nic}’ very’ or [\textsuperscript{?}a\textsuperscript{rib} ‘work-Sg.’ of Table 21 (b) (both forms containing final Cs that are underlyingly lenis) provide evidence for this hierarchy. Both items exhibit penultimate stress instead of equally possible final stress. To prove my point, let us consider the individual candidates in more detail by first assuming no crucial hierarchy of the constraints. The actual ranking is then given in Tableau 1. The structures of the according CVC.CVC candidates are as follows.

Figure 49. CVC.CVC candidates

\begin{itemize}
  \item Candidate (a) is an example for unwanted stress assignment to the final syllable. Its foot structure is (H)(H) which means that both CVC syllables are footed while the final one constitutes the head foot. The overt form would be something like [‘ban\textsuperscript{nic}’]. The \omega-node dominates a syllable as well as a foot at the right word edge. This, of course, automatically means that the right word edge is structurally rich. Candidate (a) therefore blatantly violates \textsc{WeakEdge}. The structure is at the same time faithful to \textsc{Righttm} due to the rightmost head foot. \textsc{Parse} (Σ) and \textsc{Parse} (σ) are not violated since all segmental content is licensed by a syllable and all syllables are included in feet. We therefore arrive at a total of one violation.
\end{itemize}
Candidate (b) (H)H has the desired initial stress. The head foot is at the same time the only foot of the PrWd. It is in penultimate position, which leaves the final syllable unparsed by a foot, satisfying WEAKEDGE. Concurrently, this structure violates of course the counter-constraints RIGHTM for building the foot in penultimate position, and PARSE (σ) for associating the ultima directly to the o-node. All in all, candidate (b) results in two violations in total. The fact that it is indeed most harmonic with regards to WEAKEDGE is blurred by it being less harmonic with respect to the other constraints.

Moving on to candidate (c), we have a structure (HH) that could be ruled out by GEN due to the two heads occurring within a single domain. Alternatively, we can also dispose of this candidate with violable constraints.\footnote{Candidate c) (HH) will be ruled out immediately by the foot form constraint RH\textsc{Type}=T to be discussed in a moment.} What we find is a foot that contains two CVC syllables. Both of them are stressed, thereby adhering to a constraint yet to come – the Weight-to-Stress-Principle. The effect is such that only WEAKEDGE is violated. The foot stretches over the whole PrWd, which entails that it is also present in ultimate position at the right word edge. We get what we just saw for candidate (a): too much structural content, and thus a violation of WEAKEDGE. It satisfies all other given constraints. Candidate (c) equals therefore (a) in terms of violations – both produce just one. They are the two most harmonic candidates up to now. They are, alas, not exactly compatible with what we would like to achieve as overt form. Neither of them has stress exclusively in penultimate position.

The next candidate given here is (d) with a structure (HL). It has the advantage that it shows the correct stress pattern with stress on the penultimate syllable as in candidate (b). Additionally, it is similar to candidate (c) in building the head foot in rightmost position in the PrWd. The foot consists of two syllables, the penultimate being stressed, the ultimate being unstressed. Even though the final syllable is not the head of the foot, i.e. unstressed, this candidate violates WEAKEDGE just like candidates (a) and (c) do. The foot is located at the right word edge, bringing along too much prosodic structure. The constraints RIGHTM, PARSE (Σ) and PARSE (σ) are by comparison satisfied. This candidate is therefore equally most harmonic with

<table>
<thead>
<tr>
<th>Candidate</th>
<th>CVC.CVC</th>
<th>WEAKEDGE</th>
<th>RIGHTM</th>
<th>PARSE (σ)</th>
<th>PARSE (Σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>(CVC).(CVC)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>(‘CVC).CVC</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>(‘CVC.CVC’</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>(‘CVC.CVC’)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>(‘CVC.CV’)&lt;C&gt;</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*!</td>
</tr>
</tbody>
</table>
respect to the given constraint set as candidates (a) and (c) are.

The last candidate is e) with the structure (HL)<C>. It has stress in initial position and satisfies WEAKEDGE by associating the final C directly to the o-node. Note, however, that the final [ç] should be incorporated into syllabic structure since none of the two consonant extrasyllabicity conditions in IV) and V) are fulfilled; i.e. the final syllable is not superheavy and the PrWd is not monosyllabic. The final [ç] should therefore not be allowed to occur outside of both the syllable and the foot at the same time. Considering the constraint set, we observe that RIGHTM, PARSE (Σ) and PARSE (σ) are all violated. Candidate (e) is therefore least harmonic with respect to the given constraint set and is, thus, indeed least likely to be the output form.

Overall, we find that it is clearly impossible to achieve the correct stress pattern and a single winner at the same time if no crucial constraint hierarchy is proposed. Only candidates (b) and (e) are otherwise automatically ruled out due to the two and three violations, respectively. Leaving the four constraints unranked with respect to each other yields the three winners (a), (c) and (d), each of them exhibiting one violation of the given constraints. All rankings except for one generate this result; RIGHTM >> WEAKEDGE gives preference to (a), (c) and (d), as does a dominating PARSE (Σ), a dominating PARSE (σ), or even {WEAKEDGE, RIGHTM} >> {PARSE (Σ), PARSE (σ)}. Only the ranking WEAKEDGE >> {RIGHTM, PARSE (Σ), PARSE (σ)} produces a single output with the correct penultimate stress. This hierarchy gives us only (b) with its (H)H structure as the winner. Candidate e) (HL)<C> is ruled out by its violation of PARSE (Σ). We see that WEAKEDGE >> RIGHTM is indeed vindicated.

So far, we mainly touched upon wellformedness constraints in the discussion. They only have organizing character within the PrWd and make no reference to syllable weight. The stress assignment in PrWds containing differing syllable types (CVC, CV, CσC, CVCC, CVVC, etc.) cannot be determined by means of these constraints. Some weight constraints need to enter the stage.

One principle we already came across was the SHSP that determines that all superheavy syllables (CVCC, CVVC) automatically receive stress. What has not yet been elucidated is how to treat the other syllable types (CV, CVC) in metrical terms.

What we basically find for LG is that the phonetically long tense Vs of LG open syllables appear to behave light with regard to syllable structure. They are not stress-attracting as CVC syllables are. This stress assignment and the respective foot structure can be attributed to the Weight-to-Stress-Principle (WSP) formulated by Prince (1991).

XII) WSP: Heavy syllables are stressed.

Prince (1991:3f.) points out that ‘stressed’ may refer

“both to grid-prominence and to foot-position, whichever is at hand. In that case, WSP serves to define a correspondence which holds between notions of salience in three domains: syllable weight (heaviness), foot structure (headship), and grid (prominence).”
It requires any heavy, i.e. bimoraic, syllable to be stress bearing. Trochaic feet that obey WSP are bimoraic (H), and bisyllabic (HL) and (LL). Kager (1999:172) points out that both of the headed structures (HH) and (HH) violate WSP since not every heavy syllable is stressed. In my analysis, this violation pattern is true not only for footed syllables but also for unfooted syllables. As soon as an H of an utterance does not receive stress, WSP is violated. The violation applies gradationally, inserting one violation mark per unstressed heavy syllable.

Another prediction made by XII is that if feet of the structure (HH) were allowed, both heavy syllables would be stress-attracting. A foot of the structure (HH) with a stress clash would result. However, this is strongly disfavored among the languages of the world. The constraint RH Type=T (rhyme type = trochee) now enforces the trochaic foot structure. I assume that it is high ranked in LG, which is vindicated by the LG data and the comparison with other trochaic Germanic languages (Dutch, English, Standard German, etc.).

XIII) RH Type=T: Feet are left-headed, i.e. (σο)ₜₛ or (μμₜ)ₜₛ (Cohn & McCarthy 1998; Kager 1999:172).

It results in stress assignment to the initial (i.e. head) element of a foot, yielding a strong-weak structure at the syllable-level or mora-level. A trochaic structure emerges. Feet containing a single heavy syllable (H) are able to satisfy RH Type=T due to being bimoraic. The strong head-mora may be the left mora, i.e. (μₜ). The right mora is consequently weak and does not constitute the head of the foot. By comparison, feet of the structure (HH) as well as an iambic stress assignment are readily excluded by RH Type=T. Also, feet of the type (L) are avoided. They constitute bad trochees in the sense that the syllable contains only one mora, which is automatically the head mora. An (L) foot is therefore left-headed and right-headed all at the same time – and is consequently not able to satisfy XIII). By this, RH Type=T implies that the well-known constraint of foot binarity (FtBin) is adhered to.

XIV) FtBin: a foot is binary at some level of representation (σ, μ) (Prince & Smolensky 1993; Kager 1999:161).

The LG stress pattern demonstrates that the trochee is in fact weight sensitive, i.e. a moraic trochee. Thus, a LG foot might end in a single heavy syllable H (i.e. CVC)

145 *CLASH: No stressed syllables are adjacent (Kager 1999:165). Even stronger, it might be assumed that configurations such as (HH) are actually structurally impossible. GEN could never produce them since feet are inherently single-headed; a prerequisite clearly not satisfied by (HH). Rather, this foot would dominate two heads. Ruling out (HH) is not the only effect of *CLASH. The constraint is also meant to rule out between-foot clashes such as in (LH)(HL). In general, all configurations are banned that show two adjacent stressed syllables (Paul Boersma, p.c.).

146 This is a more general formulation of the constraint RH CONTOUR: A foot must end in a strong-weak contour at the moraic level (Kager 1999:174).

147 Superheavy syllables are not excluded by RH Type=T, because they yield a strong-weak-weak structure at the mora level. The head-mora of the foot occurs in leftmost position, thereby constituting a trochee.
containing μμ, or two light syllables LL (i.e. CV.CV) (Kager 1995:397f., and 1999:147).

As I will now show, from the assumption that CVC is heavy and CV is light, it must follow that phonetically long tense vowels are really monomoraic. The line of reasoning is similar to the analysis given by van Oostendorp (1995) for Dutch, being based on earlier findings by Smith et al. (1989). Van Oostendorp observes that along the lines of Hayes (1995)’s Metrical Stress Theory, no language exists that exhibits a stress pattern within which only (C)V syllables attract stress, while CVV syllables do not. The compilation in Table 22 (p. 124) seems to predict exactly this supposedly non-existent system, though. Van Oostendorp (1995:34) avoids this issue and proposes an alternative approach. He suggests for the Dutch vowel system that tense vowels count as light as opposed to diphthongs and long tense vowels of loanwords. They do not automatically attract stress. Instead of CVV rather a representation CVtense is proposed. The contrasting syllable types are therefore not two kinds of heavy syllables, but heavy CVC vs. light CV.

A somewhat different account for Dutch syllable weight is presented by Gussenhoven (2009). Although his approach has some appeal in arguing from a primarily phonetic perspective, I will not follow his line of reasoning in my discussion of LG. Gussenhoven (2009) posits that long vowels acquire bimoraic status in stressed position (i.e. in the head of a foot). Their correspondents in unstressed position that are traditionally also assumed to be long maintain their underlying monomoraicity. This approach attempts to explain the fact that tense vowels are realized as phonetically long only under stress; if in unstressed position, they are produced as phonetically short. Gussenhoven (2009:183) compares in his analysis stressed and unstressed tense vowels only with stressed lax vowels. The unstressed lax vowels are excluded from his observations. This analytical gap is rather disadvantageous. It is not quite clear why durational increase should not also be present in stressed vs. unstressed lax vowels, and why this durational difference should, then, not be represented in terms of morae.

In fact, Jessen et al. (1995:430) discover for Standard German that the stressed lax vowels [i, e, a, ə] differ from their unstressed counterparts in vowel duration at a statistically significant level.\(^{148}\) The durational discrepancy is not as prominent as for tense vowels, though. This is reflected in the fact that almost all tense vs. lax pairs are virtually identical with respect to duration in unstressed position.\(^{149}\) Basically, the lax vowels are less affected by stress. Their durational variance is not as big in head vs. non-head position as the duration of the tense vowels is. They are nevertheless shorter in unstressed than in stressed context.

Drawing on these observations from Standard German, it appears reasonable to assume that a similar durational difference exists also for the Dutch head and non-

\(^{148}\) The measurements of the unstressed vowels were performed on the syllable immediately preceding the main word stress, i.e. in pre-focal position (Jessen et al. 1995:428).

\(^{149}\) Jessen (1998:147) notes for Standard German: “In position before main stress, which is a position in which vowels are likely to be realized without any level of stress, tense and lax vowels usually still differ significantly in formant structure, but no longer in duration”.

Mooshammer (1999).
head lax vowels. This raises the question as to why the phonetic duration variation between stressed and unstressed lax vowels should be trivial, if the equivalent variation between stressed and unstressed tense vowels is recognized as being phonologically relevant? In particular if arguing that the “reevaluation of the phonetic facts” (Gussenhoven 2009:182) is crucial to the phonological analysis.\footnote{An additional detriment of this approach could be seen in the fact that Gussenhoven ignores possible interference of Richness Of The Base. He postulates monomoraic input forms for unstressed tense vowels, and bimoraic input forms for stressed tense vowels, bearing on phonetic data (i.e. the overt forms). He is not able to exclude bimoraic input forms from also occurring in unstressed position, or monomoraic input forms from occurring in stressed position.}

I therefore rather propose a constant, stress-independent moraic status of all LG vowels. The stressing of vowels has only an effect on the phonetic realization, not on the phonological representation. Thus, the occurring differences need not be accounted for in terms of morae. Phonetically short lax vowels are generally monomoraic. Phonetically long tense vowels are equally monomoraic, irrespective of their stress level. This is a direct consequence of the LG weight distribution of CVC as heavy and CV as light.

4.1.3. OT analysis of non-final stress

The ranking of the constraints and the resulting foot structures for the crucial examples is illustrated in the following tableaux.

Tableau 2 illustrates the output for CVC.CVC.CVC words like [per’zenmən] ‘boat cover-Sg.’ from Table 22 (d). The occurrence of candidates with a stress clash (HH) is prohibited by GEN. RHTYPE=T is therefore not needed in this case and does not occur in the tableau. Output forms containing an extrasyllabic final C are omitted since none of the conditions (superheavy ultima, or mono-syllabic PrWd) is satisfied. WSP is violated by every of the possible candidates since in all cases two heavy syllables of the output are left unstressed. It is therefore irrelevant for the determination of the winner.

Tableau 2. [per’zenmən] ‘boat cover-Sg.’

<table>
<thead>
<tr>
<th>CVC.CVC.CVC</th>
<th>WEAKEDGE</th>
<th>RIGHTM</th>
<th>PARSE (c)</th>
<th>PARSE (o)</th>
<th>WSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) (CVC).CVC.CVC</td>
<td>**!</td>
<td>**!</td>
<td>**</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>(b) CVC.(CVC).CVC</td>
<td>*</td>
<td>**</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) (CVC).CVC.(CVC)</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Candidate (a) is harmonic with respect to WEAKEDGE but violates RIGHTM twice. Two further violations are inflicted by the un-footed penultimate and final syllable. Similar violation marks are inflicted by candidate (b), the only difference being that the H(H)H structure yields one violation of RIGHTM. PARSE (c) is violated twice just as is the case in candidate (a).
So far no crucial ranking is necessary because candidate (a) loses automatically against (b) due to having six violation marks as compared to five. It is the comparison between the candidates (b) and (c) that alludes to the constraint hierarchy determined in Tableau 1. The finally stressed candidate (c) comprises only four violation marks in total which would elect it as the winner if the constraints were left unranked. It has the footing \(H(H)H\) that violates WEAKEDGE, and PARSE (\(\sigma\)) – and the here irrelevant WSP.

The treatment of the final syllable is the crucial point here. The correct output (b) with penultimate stress results from the ranking of WEAKEDGE >> RIGHTM. It is not possible to identify a more specific ranking by means of the losing candidates. The other constraints hence still remain unranked with respect to each other.

The analysis adds up to the preliminary ranking \{SHSP, Non-Exhaustivity\} >> RhType=T >> WEAKEDGE >> \{RIGHTM, PARSE (\(\Sigma\)), PARSE (\(\sigma\)), WSP\}. The winner is candidate (b) with its \(H(H)H\) foot structure.

It has now been demonstrated that if the penultimate syllable is CVC (i.e. contains lax V plus succeeding non-lenis C), stress falls on it. This result is equally valid for CVC.CVC.CV cases like [val'halla] ‘Valhalla’. The stress is assigned likewise to the heavy penultimate syllable. If the current constraint ranking is maintained we end up with the correct output form \(H(H)L\) in (b) of Tableau 3. It satisfies WEAKEDGE, and shows four additional violations among the unranked constraint set, i.e. one violation of RIGHTM due to the penultimate position of the syllable foot, two violations of PARSE (\(\sigma\)), and again one violation of WEAKEDGE.

Tableau 3. [val'halla] ‘Valhalla’

<table>
<thead>
<tr>
<th>CVC.CVC.CV</th>
<th>RhType=T</th>
<th>WEAKEDGE</th>
<th>RIGHTM</th>
<th>PARSE ((\Sigma))</th>
<th>PARSE ((\sigma))</th>
<th>WSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) ('CVC).CVC.CV</td>
<td></td>
<td>**!</td>
<td></td>
<td>**</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) (\text{CVC,'(CVC).CVC})</td>
<td></td>
<td></td>
<td>**</td>
<td>**</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) (\text{CVC,'(CVC.CVC)})</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(d) (CVC).CVC.(CV)</td>
<td></td>
<td></td>
<td>*!</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) (CVC).(CVC.CV)</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

The losing competitor in (a) has the foot in antepenultimate position (\(H)HL\). WEAKEDGE is satisfied, but a fatal violation is caused by RIGHTM. Additionally, PARSE (\(\sigma\)) is violated twice. WSP finally causes one more violation. This excludes (a) as a possible output form.

Candidates (c) through (e) are ruled out either due to the crucial ranking of WEAKEDGE or due to RhType=T. The additional violations of WSP and PARSE (\(\sigma\)) are insubstantial.
The constraint hierarchy \{SHSP, Non-Exhaustivity\} >> RhType=T >> WeakEdge >> \{RightM, Parse (Σ), Parse (o), WSP\} obtained above is not (yet) altered.

The CV.CVC.CsC\textsuperscript{151} structure (e.g. [ka’nenkən] ‘rabbit-Sg.’) in Tableau 4 yields penultimate stress parallel to the preceding cases. Overt forms showing final stress are therefore excluded. The given ranking is also valid for CV.CVC.CV cases like [ku’lenna] ‘calendar-Sg.’ in Table 22 (a).

The decision is made here between penultimate stress of L(H)L in (b), and antepenultimate stress of (LH)L in c), both comprising three violation marks in total. The ranking of RhType=T >> WeakEdge >> \{RightM, Parse (Σ), Parse (o), WSP\} does not determine a single winner, though. This hierarchy causes the exclusion of initially stressed (L)HL in (a), and the iambic stress of (LH)L in d) by means of RhType=T. Also, it enforces the elimination of word-final footing in LG polysyllables as in L(HL) of candidate (e). What the ranking does not produce, however, is a decision between (b) and (c). Both outputs win above the other candidates. In order to achieve the desired winner (b), we need to rank WSP. This is not only necessary to achieve a separate winner here, but it is also in accordance with the LG data. Ranking WSP demonstrates that the obligation to assign stress to heavy syllables rather than light syllables is fairly potent in LG. What is not determinable, though, is whether a crucial ranking regarding WeakEdge exists. WSP therefore remains unranked with respect to this constraint for now.

Tableau 4. [ka’nenkən] ‘rabbit-Sg.’

<table>
<thead>
<tr>
<th>CV.CVC.CsC</th>
<th>RhType=T</th>
<th>WSP</th>
<th>WeakEdge</th>
<th>RightM</th>
<th>Parse (Σ)</th>
<th>Parse (o)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>(CV).CVC.CsC</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>CV.(CVC).CsC</td>
<td></td>
<td>*</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>(’CV.CVC).CsC</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>(CV’.CVC).CsC</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>CV.(’CVC).CsC</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

The altered ranking is therefore now \{SHSP, Non-Exhaustivity\} >> RhType=T >> \{WSP, WeakEdge\} >> \{RightM, Parse (Σ), Parse (o)\}.

We have seen so far that the given constraint hierarchy can account for the stress pattern of words of the type CV.CVC.CV / CVC.CVC.CV as well as of words of the type CV.CVC.CsC or CV.CVC.CV. The stress assignment in the CVC.CVC.CV words like [’tombola] ‘tombola-Sg.’ or CVC.CV.CVC words like [’naxtigal] ‘nightingale-Sg.’ given in Table 22 (e) and (f) is addressed next. The desired output

\textsuperscript{151} The final CVC syllable is here indeed CsC, which counts as light. This becomes evident only in the LG bisyllables discussed in 4.2.
form has in both cases initial stress on the heavy CVC syllable. Possible secondary stress is ignored here.

Tableau 5. ['tombola] ‘tombola-Sg.’

<table>
<thead>
<tr>
<th>CVC.CV.CV</th>
<th>RHType=T</th>
<th>WSP</th>
<th>WEAKEdge</th>
<th>RHTM (Σ)</th>
<th>PARSE (σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) (CVC.CV.CV)</td>
<td></td>
<td></td>
<td></td>
<td><strong>!</strong></td>
<td>**</td>
</tr>
<tr>
<td>(b) CVC.(CV.CV)</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) (CVC.CV.CV)</td>
<td>!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) (CVC.CV.CV)</td>
<td>!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tableau 5 illustrates the constraint ranking for the CVC.CV.CV cases. We find that candidate (d) (HL)L is ruled out due to its iambic foot structure. Candidate (b) fatally violates WSP and WEAKEdge because the foot is built over the two light syllables (LL) at the right word edge to the exclusion of the initial H. This leaves us with candidate (a) with the structure (H)LL and candidate (c) with the structure (HL)L. We see that the initially stressed form in (c) is more harmonic than (a) with respect to the given constraints. The reason is that the penultimate L is parsed into the head foot in (c), thereby creating only one violation of RHTM and one violation of PARSE (σ). Candidate (a) violates by comparison both constraints twice since the penultimate L is not included in the head foot. This means that the foot is one position further away from the right word edge, and a total of two syllables are left unparsed. Thus, candidate (c) wins.

Turning to the CVC.CV.CVC words, the ranking in Tableau 6 gives us the winning candidate (HL)H in (c). Its violation of WSP is insubstantial since all other candidates equally show at least one violation of this constraint in CVC.CV.CVC words. RHTM and PARSE (σ) each receive one further violation mark, yielding three violations in total. The other candidates except (a) are ruled out by inflicting one fatal violation on RHType=T. This automatically renders the further violations of the unranked constraint set irrelevant. Left over is now only the output form (H)LH in (a). It loses against (HL)H in (c) by means of RHTM and PARSE (σ). Both constraints are violated twice which gives five violations in total.

All in all, the candidates (c) of Tableau 5 and Tableau 6 with the foot structure (HL) turn out to be most harmonic for CVC.CV.CV words as well as for CVC.CV.CVC words with respect to the constraint hierarchy. It is only the final syllable, be it heavy or light, that is left unparsed in both cases.
The preceding tableaux indicate a clear preference for the extrametrical or extrasyllabic candidates. This is consistent with the usual assumption that final consonant extrasyllabic yields the rather restricted occurrence of final stress in a number of languages (e.g. Glamertenütsch, English, Cairene Egyptian Arabic, Latin).

Note that this result is a preliminary one. It is only applicable to cases with final lenis C as will be shown in chapter 6. The special status of fortis consonants as moraic eliminates candidates with extrametrical or extrasyllabic final fortis C. This only has consequences for the stress assignment in LG bisyllables of the structure CV.CVC (e.g. [kœˈjyt] ‘cabin-Sg.’). The stress pattern of all other cases is unaffected. The rather marked extrasyllabic structure is not crucially needed in the polysyllabic cases discussed so far. An unfooted final syllable does the job just as well.

The LG stress pattern can at the moment be characterized as follows. The final CV, CVC and CaC syllables of LG polysyllables do not receive stress. This is only partly related to syllable weight. Rather, a general tendency towards weakened word edges yields this result. The penultimate syllable decides on the location of the word stress. If the penult is heavy stress surfaces on it; if the penult is light and the antepenult is heavy stress is assigned to the antepenult. The constraint ranking established so far is \{SHSP, Non-Exhaustivity\} >> RH\text{Type}=T >> \{WSP, WE\text{akEdge}\} >> \{\text{R\text{ightM}}, \text{PARSE} (\Sigma), \text{PARSE} (\sigma)\}.

\subsection*{4.1.4. Final stress and superheavies}

Next to final CV, CaC and CVC, a fourth syllable type CVXC complements these basic syllable structures. It is restricted to the final position in a PrWd and is usually referred to as ‘superheavy’. I will demonstrate in the following that, strictly speaking, there are no actual superheavy syllables (S) at the phonological surface level in LG. Final consonant extrasyllabic renders them heavy instead.

The superheavies are either of the structure CVCC with four segmental positions at the underlying level, or of the structure CVC\textsuperscript{+} with three underlying segmental positions plus additional weight (a mora) as the synchronic remnant of pre-apocope.
status of the syllable. For simplicity reasons, I present the latter items nevertheless as CVVC in the remainder of the stress discussion. According examples are given in Table 23. The items in (d) receive primary word stress per SHSP as mentioned in 4.1.2 above. They constitute together with the overlong items in (a) to (c) an environment that at last allows for final consonant extrasyllabicity at the surface level.

Table 23. Final / superheavy stress in LG

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) CV.CV.CVVC</td>
<td>'chocolate-Sg.'</td>
<td>[jə'kɛl̩aʊd]</td>
</tr>
<tr>
<td></td>
<td>'rigging-Sg.'</td>
<td>[tə'kyeɪ̯əɾ̩]</td>
</tr>
<tr>
<td></td>
<td>'grilled cutlet-Sg.'</td>
<td>[ˈkɒb̩eɪ̯əʊd]</td>
</tr>
<tr>
<td>(b) CV.CVVC</td>
<td>'unwanted persons'</td>
<td>[bəˈɡoʊəɾ̩]</td>
</tr>
<tr>
<td></td>
<td>'sailor-Sg.'</td>
<td>[məˈtroʊəɾ̩]</td>
</tr>
<tr>
<td>(c) CVC.CVVC</td>
<td>'caboose-Sg.'</td>
<td>[kɒmˈbɹuːz]</td>
</tr>
<tr>
<td>(d) CV.CVCC</td>
<td>'mud-Sg.'</td>
<td>[moʊˈræts]</td>
</tr>
<tr>
<td></td>
<td>'mattress-Sg.'</td>
<td>[maʊˈræts]</td>
</tr>
<tr>
<td>(e) CVC.CVCC</td>
<td>'compost'</td>
<td>[kɒmˈpoʊst]</td>
</tr>
</tbody>
</table>

Besides this superheavy stress we also find lexical stress assignment to the final syllable. This matter is discussed in section 4.3 below.

The tokens presented in Table 23 (a) to (c) end in CVVC – i.e. syllables featuring a phonetically overlong vowel and a final lenis obstruent. The examples in Table 23 (d) and (e) display a final syllable with a phonetically short lax vowel or a phonetically long tense vowel succeeded by a final consonant cluster. Bear in mind for chapters 5 and 6 that the quality of the final C is essential in determining the moraic status of the preceding vowel. Phonetically overlong, i.e. ELD 3 vowels may only occur where a surface lenis C follows. Surface fortis Cs do not allow for this vowel length.

The constraint ranking for the superheavy cases in Table 23 (c) is given in Tableau 7. If the ranking RhType=T >> {WSP, WeaKEdge} >> [RIGHT, Parse (Σ), Parse (o)] is maintained, candidate (d) emerges as the winner. It has the structure H(TH)<C> with an extrasyllabic final C to satisfy WeaKEdge. Only three violations occur within the unranked constraint set RIGHT, Parse (Σ), and Parse (o).

All of the candidates cause a violation of WSP because each of the possible outputs leaves one heavy syllable unstressed.

Candidates (a) through (c) are obviated as possible outputs by the ranking of RhType=T and WeaKEdge. Where (a) and (b) have a superheavy syllable in foot final position, candidate (c) has a foot that is constructed by a heavy syllable and an

---

152 A faithfulness constraint such as MAX-IO: Input segments must have output correspondents (Kager 1999:67) maintains the underlying segmental positions on the surface level. I assume that a mora can be also present in the underlying form.
CHAPTER 4. LOW GERMAN STRESS 143

extrametrical but footed final C. The output (\(H\)).H<C> in (e) loses against H(H)<C> in (d) by means of \textsc{Rightm}. The reason is that (\(H\)).H<C> causes here two violations by building the foot two positions away from the right word edge; i.e. a syllable and the adjoined position come between the foot and the right word edge. H(H)<C> violates \textsc{Rightm} by comparison just once by means of the extrasyllabic <C>.

By way of Tableau 7 we can assume that candidate (d) receives a heavy status of the final syllable since the final <C> is rendered extrasyllabic. Superheavy finals are excluded as possible winners. Their segmental positions are, however, underlyingly present. This is indicated by the fact that if the syllable had had the underlying structure CVC, it would have become light (CV)<C> in the surface form due to final consonant extrasyllabicity. Stress would then indeed not be allowed to surface in final position – as it actually does. Rather, stress would need to surface on the penultimate syllable in order to satisfy the trochaic stress pattern enforced by \textsc{Rhtype}=T. The respective structure would then be (HL)<C>. This is not what we find, though. Apart from the phonetic status as tense overlong vowels, the final stress assignment definitely suggests that these vowels are heavy at the surface level. The overall result is that stress may not surface on an initial light syllable in cases with superheavy final syllable. We can assume that the final syllables are bimoraic. This satisfies the \textit{principle} of Maximal Binarity (MaxBin).

\[ \text{XV)} \quad \text{MaxBin: a syllable must be maximally bimoraic.} \]

\[ 154 \text{ In fact, the SHSP could be assumed to exclude } \text{a priori} \text{ forms containing initial stress such as (e) (} \text{H} \text{).H}<C>. \text{ However, as will be shown in the analysis of the consonants in chapter 6, the final syllable counts here not as superheavy but as heavy. The final lenis C is non-moraic. We will see that even if GEN would create extrasyllabic final Cs for all forms and not only final lenis Cs, fortis Cs and sonorant Cs would structurally require to be moraic, hence syllabified.} \]

\[ 155 \text{ Note that this marking is simplified. The vowel is in cases such as these not underlyingly long. Rather, an additional weight bearing unit (a moraic morpheme) is latched onto the right edge of the final syllable making the syllable underlyingly bimoraic. See sections 5.3 and 6.2 for the discussion of surface bimoraic vowels in LG.} \]
Bye (2001:163) notes with respect to this tenet that it “is assumed to be hardwired into Gen, i.e. trimoraic syllables are universally banned.” MaxBin therefore generally disallows the occurrence of superheavy syllables in the surface form.

Moving on to the CV.CV.CVVC cases like [tuke'luza] ‘rigging-Sg.’ in Table 23 (a), the ranking produces virtually the same result with final stress as in the CVC.CVVC cases. The most wellformed output is here (LL)(H)<C>. The result we obtain for the CV.CVVC cases like [mo'trooz] ‘sailor-Sg.’ in Table 23 (b) is rather similar with L(H)<C>. This outcome is replicated also in the cases in Table 23 (d) with word-final consonant cluster (e.g. [mo'rats] ‘mud’). The ranking of these CV.CVCC cases is given in Tableau 8.

Tableau 8. [mo'rats] ‘mud’

<table>
<thead>
<tr>
<th>CV.CVCC</th>
<th>RhTYPE=T</th>
<th>WSP</th>
<th>WEAKEDGE</th>
<th>RIGHTM</th>
<th>PARSE (Σ)</th>
<th>PARSE (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) (CV),CVCC</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| (b) CV,(CVCC) | | *! | | | | *
| (c) (CV),CVC<C> | *! | * | ** | * | * | *
| (d) CV,(CVC)<C> | | | | | | |
| (e) (CV,CVC)<C> | *! | * | | | | |

Candidate (d) displays a similar structure as the winner of Tableau 7, the difference being here that the final syllable does not contain an overlong VV but rather a sequence VC. The syllable counts as heavy and receives stress. The final <C> stands in extrasyllabic position which is harmonic with respect to WEAKEDGE.

The footing (L)S in (a) fatally violates RhType=T since it does not create a trochee. Apart from one further violation of WSP (it stresses the initial L), it also causes one violation of RIGHTM due to the word-initial location of the head foot. Moreover, PARSE (α) is violated by leaving the final superheavy CVCC unfooted. The (L)S structure is thus excluded as a possible output for words of the CV.CVCC-type. An equally unharmonic output is (c). It is ruled out basically for the same reasons as (a). The difference between the two candidates is that (c) comprises an additional violation of PARSE (Σ). Candidate (b) exhaustively syllabifies and foots the final CVCC syllable. This results in the allocation of a violation mark to WEAKEDGE. It is thereby discarded although it shows only one additional violation of PARSE (α). This leaves us with the strongest competitor of (d), the initially stressed (e). It has the structure (LH)<C> that yields three violations in total. The ranking of WSP, however, ultimately discards this candidate as possible output.

The most wellformed output for a CV.CVCC input is consequently (d) with the structure L(H)<C>. Final stress in LG thus automatically arises if a superheavy

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155 (L)S denotes a light syllable foot with a following unfooted superheavy syllable.
syllable occurs in final position. Such a syllable can either contain a phonetically
overlong vowel or a final consonant cluster.

Tableau 7 and Tableau 8 demonstrate that the visibility of the final syllable for
metrics and prosody depends on the segmental content. The final syllable receives
primary word stress if it is the rightmost heavy syllable in the output. Thus, rather
than stressing an initial syllable, WEAKEDGE is violated and stress is placed on
the final heavy. This is only possible in words with invariantly heavy final CVVC and
CVCC. It is in these cases that the weight of the final syllable is irrelevant.

4.1.5. General stress pattern

It needs mentioning that the analyzed data is rather limited and, thus, is not entirely
conclusive.

We have seen above, however, that the penultimate syllable decides on the
definitive stress placement. If the penult is heavy (i.e. CVC) stress stays there; if the
penult is light (i.e. CV) and the antepenult is heavy (i.e. CVC) stress is assigned to
the antepenult.

Final stress in LG results from a superheavy syllable. Its final constituent is
rendered extrasyllabic. The syllable remains heavy in the output and is therefore able
to attract the primary word stress.

4.2. Stress in LG bisyllables

The constraint ranking developed so far for the stress pattern of LG polysyllables is
challenged by a part of the LG bisyllables. This group of words appears to assign
stress deviantly – namely to the ultima, without having a superheavy final syllable.
Even phonetically short or long full vowels in closed final syllable receive primary
word stress in these cases if the penult is light (note in comparison the CVC.CVC
structures with penultimate stress like ['fæslam] 'carnival-Nom.Sg.' in Table 21 (b).
Respective examples of LG bisyllables of the structure CV.CVC with unexpected
final stress are given in Table 24 (b). They deviate from the LG stress pattern
developed so far. The CV.CVC items with regular stress on the penult are given in
Table 24 (a).

Table 24. Bisyllabic stress in LG

<table>
<thead>
<tr>
<th>a</th>
<th>CV.CVC</th>
<th>b</th>
<th>CV.CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>'spoon-Sg.'</td>
<td>['spɔn]</td>
<td>'cabin-Sg.'</td>
<td>[ˈkæbɪn]</td>
</tr>
<tr>
<td>'mop-Sg.'</td>
<td>['mɔp]</td>
<td>'chapel-Sg.'</td>
<td>[ˈtʃeɪp]</td>
</tr>
<tr>
<td>'time-Pl.'</td>
<td>['taɪm]</td>
<td>'langoustine-Sg.'</td>
<td>[ˈlæŋəstʌn]</td>
</tr>
<tr>
<td>'outside'</td>
<td>['ouds]</td>
<td>'capon-Sg.'</td>
<td>[ˈkɒpən]</td>
</tr>
<tr>
<td>'tobacco-Sg.'</td>
<td>['tɔbək]</td>
<td>'pleasure-Sg.'</td>
<td>[ˈpleʒər]</td>
</tr>
<tr>
<td>'peewit-Sg.'</td>
<td>[ˈpiuɪt]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'therefore'</td>
<td>['ðɛrəv]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Especially interesting are the examples in (a) [ˈtobak] ‘tobacco-Sg.’, [ˈkivvt] ‘peewit-Sg.’ and [ˈdɛɾv)m] ‘therefore’ where we find a full vowel in the ultima and stress surfaces in the light penult. Given the words in Table 24 (a), we would clearly expect the same stress assignment to the penult also in the cases in (b). The ranking \textsc{WeakEdge} \textsc{\textgreater \textgreater} \textsc{Rightm} should not allow for a footing as in (b). In fact, it should rather support initially stressed *[ˈkəjyːt] with a foot structure (LL)<C> parallel to Table 24 (a). Yet, \textsc{WeakEdge} does not meet these expectations and stress surfaces on the final syllable. This behavior is rather unexpected, the more so because there is no clear-cut difference between the CVC syllables in Table 24 (a) and the CVC syllables in Table 24 (b). The words of Table 24 (b) are Romance loanwords that were probably introduced into the language with a final schwa and regular penultimate stress, whereas the examples in Table 24 (a) are either no loans (e.g. [ˈdɛɾv)m]) or apocopated Romance loanwords (e.g. [ˈtobak]).

Looking more closely at the CV.CVC bisyllables in Table 24 (b), we find that following the loss of the final schwa-syllable the word stress in these items lies on the final CVC syllable, irrespective of whether the nucleus contains a phonetically short or long (or overlong) full vowel. This comes as a surprise for it appears that \textsc{WeakEdge} renders neither the final syllable nor the final segment extrametrical here. I will show in the following section that the current constraint ranking, though efficient in explaining all of the other LG data, is not yet able to fully cope with the bisyllables. In order to be able to account for the metrical irregularity we need to consider a pattern of lexical stress present in loanwords. The OT analyses of the bisyllabic data in Table 24 (a) and (b) are given below.

4.2.1. \textsc{Ot} analysis of bisyllabic stress

I first give a brief OT analysis of the bisyllabic words of Table 24 (a) above (e.g. [ˈkivvt] ‘peewit-Sg.’). Note that the items of Table 24 (a) with a schwa in the nucleus of the ultima can be treated identically to the CV.CVC items showing a full vowel in the nucleus of the ultima.

The forms in Table 24 (a) with a full lax vowel in the ultima require the crucial ranking of \textsc{WeakEdge} \textsc{\textgreater \textgreater} \textsc{Parse} (α) \textsc{\textgreater \textgreater} \textsc{Rightm}. This results basically from the underlyingly moraic status of fortis Cs as will be discussed in more detail in section 6.2.3. Outputs like CV.(CVC) that leave the initial syllable unfooted lose thereby from (CV.CV)<C> forms. This change in the constraint hierarchy has in fact no influence on the results obtained so far. The accordingly adjusted ranking follows in Tableau 9.

\footnote{Having a glance at LG monosyllables, high ranked \textsc{WeakEdge} would have the capacity to discard outputs with primary word stress, i.e. all LG monosyllables, right away.}

\footnote{[ˈkəjyːt] ‘cabin-Sg.’ < French \textit{cabin} ‘hut-Sg.’; [ˈkəpəl] ‘chapel-Sg.’ < Middle Latin \textit{capella}; [ˈɡroːhart] ‘grenade-Sg.’ < Italian \textit{granata} from Latin \textit{mätium} grānātum ‘pommegranate’; [ˈkaːpɔn] ‘capon-Sg.’ < French \textit{chapon}; [ˈplezir] ‘pleasure-Sg.’ < French \textit{plaisir}; [ˈtobak] ‘tobacco-Sg.’ < Spanish \textit{tabáco} with stress shift to the penult. I am not aware of any CV.CVC cases in LG such as in Table 24 (c) that do not fall into the category of loanwords.}

\footnote{With respect to lexical or grammatical word-level stress, I assume with Kohler (2008:258) that it is “a place marker in the phonology of words […]. It is an abstract phonological specification of a \textit{position} (a syllable) in a word; it has no physical attributes by itself.”}
We find that bisyllables with a light penult and ending in a CVC-syllable enforce penultimate stress and final consonant extrasyllabicity. Interestingly, the loanword ‘tobacco-Sg.’ displays a stress shift from the penultimate syllable in the original item tabáco to the penult in the LG word [tobak] as a result of the constraint hierarchy. I assume that due to the relatively high frequency of the word (it occurs in the language not only as an individual lexeme but also in collocations) its stress pattern has been adjusted to the LG norm.

Tableau 9. [kivit] ‘peewit-Sg.’

<table>
<thead>
<tr>
<th></th>
<th>RHType=T</th>
<th>WSP</th>
<th>WeakEdge</th>
<th>Parse (α)</th>
<th>RightM</th>
<th>Parse (Σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>(CVC).CVC</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>(CVC.CV(C)</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>(CVC.CVC)</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>(CVC.CV)&lt;C&gt;</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>CVC.(CVC)</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bisyllables with a heavy penult like [dxta] ‘daughter-Sg.’, [bannç] ‘very’ or [fasm] ‘carnival-Sg.’ given in Table 21 above do not require extrasyllabicity. The initial syllable is able to manifest the trochaic stress pattern all by itself. The result for a CVC.CV structure is briefly illustrated in Tableau 10, superseding Tableau 1. The merited winner is (H)H in (a). The output form for CVC.CV [dxta] ‘daughter-Sg.’ is (H)L.

Let us turn now to CV.CVC forms featuring ultimate stress such as [kə'jyst] ‘cabin-Sg.’ of Table 24 (b). Their bisyllabic stress pattern is obviously not in line with the assumption of a structure-free right edge of the PrWd. The words have primary word stress in final position, i.e. the head foot is final in the PrWd. The location of the primary stress has not changed with respect to the donor languages.
We palpably arrive at the wrong output form here, which is not exactly surprising since the constraint ranking generates the correct output for the bisyllables with penultimate stress. The most wellformed output in Tableau 11 is accordingly candidate (e). It causes only two violations in total; one of RIGHTM for not parsing the final C into the foot, and one of PARSE (Σ) for not parsing the final C into a syllable. RHType=T and WEAKEDGE are left untouched. The desired output would be, however, candidate (b). It yields a fatal violation of WEAKEDGE by comprising the head foot (H) at the right edge of the PrWd. One further violation is inflicted by low ranked PARSE (α).

Tableau 11. [kɑ'jyːt] `cabin-Sg`.

<table>
<thead>
<tr>
<th>CV.CVC</th>
<th>RHType=T</th>
<th>WSP</th>
<th>WEAKEdge</th>
<th>PARSE (α)</th>
<th>RIGHTM</th>
<th>PARSE (Σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) 'CV.CVC'</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) CV.'CV'C</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) 'CV.CVC'</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) CV.'CV'C</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) 'CV.CV'&lt;C&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Footing the L as in candidate (a) does not adhere to the requirement for trochaic feet. RHType=T is fatally violated. Additionally, WSP is violated once. Lastly, RIGHTM and PARSE (α) are equally not satisfied by this candidate. Not a particularly wellformed candidate with respect to the given constraints, we must say.

An equally unharmonic output is (c). It has the structure (LH) and is discarded by means of WSP and WEAKEDGE. Low ranked RIGHTM, PARSE (Σ) and PARSE (α) are left unviolated.

Candidate (d) has iambic stress assignment which excludes this output right away. Its (LH) structure is again most wellformed with regards to RIGHTM, PARSE (Σ) and PARSE (α). The violation of RHType=T is fatal, though. Otherwise it would have been ruled out by violating WEAKEDGE.

What we in fact get here with the winner in (e) is the same result as for the CV.CVC forms of Table 24 (a); stress on the penult. There is no way to rearrange the yet unranked constraints to achieve the final word stress here, while not simultaneously confounding all the tableaux developed above. So, what can we do? We need to consider the possibility of lexically stressed items in LG; items that unlike the [ˈtɛbək]-type have not been adjusted for the LG metrics. This is done in the subsequent section.

159 The notation ‘Θ’ marks the desired but not achieved winner of a tableau. The symbol ‘*!’ denotes a winning candidate that is not desired as an output form.
All in all, we have established the following weight distributions of LG syllable shapes.

Table 25. Syllable weight in LG

<table>
<thead>
<tr>
<th></th>
<th>non-final</th>
<th>final</th>
</tr>
</thead>
<tbody>
<tr>
<td>light</td>
<td>CV, C(\alpha\C)</td>
<td>CV, C(\alpha\C), CVC</td>
</tr>
<tr>
<td>heavy</td>
<td>CVC</td>
<td>CVC, CVCC</td>
</tr>
</tbody>
</table>

The weight is determined – at least partly – by the syllable’s position within the PrWd and the segmental context. CV- and C\(\alpha\)-syllables are invariantly light. CVC is mostly counted as being heavy, if not standing in final position in a polysyllabic word. The constraint ranking developed in the sections above is formulated again in XVI).

XVI) \{\text{SHSP, Non-Exhaustivity}\} \gg
    \{\text{RHType=T}\} \gg
    \{\text{WSP, WeakEDGE}\} \gg
    \{\text{PARSE (o)}\} \gg
    \{\text{RIGHTM, PARSE (Σ)}\}

4.3. Loanword stress

The LG lexicon contains a substantial number of loanwords. Some of them behave along the lines of the LG stress pattern, as we can see in the examples in Table 22 (a) to f) above. Stress is assigned here to the rightmost heavy syllable exclusive of the final syllable. There is, however, a subset of loans that in some respects constitute exceptions to this stress pattern, just like the cases in Table 24 (b). Their word stress is not (completely) predictable by means of the given constraint ranking.\(^{160}\) I therefore argue that they contain lexically assigned stress that surfaces due to a high ranked faithfulness constraint. By comparison, the lack of lexical stress in the input forms of native LG words leaves the faithfulness constraint untouched.

The list in Table 26 contains in addition to Table 24 (b) examples of loanwords that were borrowed into LG with such a deviant stress pattern. The most apparent characteristic of the forms in Table 26 (a) to (d) is that a supposedly light CV syllable is stressed rather than a heavy CVC syllable. If all three syllables of a trisyllabic word are light, stress may occur optionally on any of these. This peculiarity is demonstrated by (e), (f) and (g) in Table 26. The loanwords of (e) with the structure CVC.CV.C(C)V pattern according to the CVC.CV.C(C)V words presented in (d). They receive antepenult stress. The CVC.CV cases of Table 26 (f) and (g) by contrast bear penultimate stress and final stress, respectively. Table 26 (b) and (c) exhibit penultimate stress. Yet, the syllable weight established for LG

\(^{160}\) Note that no cases of C\(V(C)\).CVC.CV(C) occur. This indicates that loans are not entirely free in their stress patterns since a heavy penult may not be ignored by stress.
cannot account for this assignment. The stress-bearing penultimate syllable here is light CV whereas the unstressed antepenult is heavy CVC. It is inexplicable by means of post-lexical stress assignment why CVC should behave as heavy in originally LG words (and older loanwords), and at the same time also behave as light in more recent loanwords. No crucial ranking of the so far unranked RIGHT, PARSE (2), and PARSE (o) could achieve this result. It appears, thus, to be necessary to assume the presence of lexical stress in loanwords.\footnote{Another solution would be to postulate a bimoraic status of tense vowels in loanwords as suggested by Astrid Kraehenmann (p.c.). This is, however, neither phonetically nor phonologically justifiable. The actually occurring qualitative assimilations of the loanword vowels to the LG vowel inventory implicates also a quantitative assimilation. The borrowed long tense Vs should therefore pattern with the LG long tense Vs as monomoraic.} The stress is lexically pre-determined, being present already in the input form. Its presence or absence in the CV.CV.CV(C)V cases in Table 26 (e) is immaterial since the output form does not differ from the stress assignment developed in 4.1.1 and 4.1.3. The words receive the expected initial word stress. A tableau for these cases (e.g. initially [‘domino] ‘domino-Sg.’) would not yield additional insight into the stress system. It is therefore omitted in the further discussion of loanword stress in LG.

### Table 26. Trisyllabic stress in LG

<table>
<thead>
<tr>
<th>(a) CVC.CV.CV:</th>
<th>CVC.CV.CV</th>
<th>CVC.CV.CV(C):</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘industry-Sg.’</td>
<td>[ʔɪndus’triː]</td>
<td>‘industry-Sg.’</td>
</tr>
<tr>
<td>‘albino-Sg.’</td>
<td>[ʔal’bitno]</td>
<td>‘flower bird-Sg.’</td>
</tr>
<tr>
<td>‘angora’</td>
<td>[ʔaŋ’gora]</td>
<td>‘alibi-Sg.’</td>
</tr>
<tr>
<td>‘sombre-Sg.’</td>
<td>[zɔm’brero]</td>
<td>‘valuta-Sg.’</td>
</tr>
<tr>
<td>‘embargo-Sg.’</td>
<td>[ʔem’bago]</td>
<td>‘tornado-Sg.’</td>
</tr>
<tr>
<td>‘tulip-Sg.’</td>
<td>[tʊlipant]</td>
<td>‘koala-Sg.’</td>
</tr>
<tr>
<td>‘charlatan-Sg.’</td>
<td>[ʔaɾələn]</td>
<td>‘judoka-Sg.’</td>
</tr>
<tr>
<td>(b) CVC.CV.CV:</td>
<td>CVC.CV.CV</td>
<td>CVC.CV.CV(C):</td>
</tr>
<tr>
<td>‘spectacle-Sg.’</td>
<td>[spɛktəkɔl]</td>
<td>‘bikini-Sg.’</td>
</tr>
<tr>
<td>‘to call-Inf.’</td>
<td>[kal’fɔtən]</td>
<td>‘melody-Sg.’</td>
</tr>
<tr>
<td>(c) CVC.CV.CV:</td>
<td>CVC.CV.CV</td>
<td>CVC.CV.CV(C):</td>
</tr>
<tr>
<td>‘domino-Sg.’</td>
<td>[ʔɪndus’triː]</td>
<td>‘umbrella-Sg.’</td>
</tr>
</tbody>
</table>

4.3.1. *OT analysis of the lexical stress*

The loanwords of the structure CVC.CV.CV such as [ʔɪndus’triː] ‘industry-Sg.’ in Table 26 (a) comprise final stress although they have the same overall HHL structure as the words of Table 22 (c) (e.g. [ζɛp’tɛmba] ‘september’). Considering
the constraint ranking obtained above, we receive a form H(H)L with penult stress rather than the final stress required in this case. Similarly, the loans in Table 26 (b), (c), and (f) contain a stressed L in penultimate position. The LG word stress pattern also appears to be inapplicable in these cases. This is evident from the following Tableau 12 for CVC.C(C)V.CV cases like [zɔm’bɾeɾo] ‘sombrero-Sg.’ taken from Table 26 (b).

Tableau 12. [zɔm’bɾeɾo] ‘sombrero-Sg.’

<table>
<thead>
<tr>
<th></th>
<th>CVC.CV.CV</th>
<th>RHType=T</th>
<th>WSP</th>
<th>WEAKEDGE</th>
<th>PARSE (α)</th>
<th>RIGHTM</th>
<th>PARSE (β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>(CVC).CV.CV</td>
<td></td>
<td></td>
<td></td>
<td>**!</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(b)</td>
<td>ʰ(CVC.CV).CV</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>CVC.(CVC.CV)</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

The constraint ranking yields winner in (b) with stress in initial position and the foot structure (HL)L. This is not the desired output form, however. The form in (c) is in fact supposed to win since stress in [zɔm’bɾeɾo] ‘sombrero-Sg.’ surfaces on the penultimate syllable.

What we can assume now is an altered ranking for (recent) loanwords. This would entail that the constraint ranking varies within the same language depending on the loanword-status of a given word; an approach that has crucially been proposed by Itô & Mester (1995, 1999) in their core-periphery model of the lexicon. Within this model, the lexicon is basically viewed as comprising multiple layers or strata. The theory essentially predicts the existence of cophonologies with a different ranking of faithfulness constraints applying to every stratum. The wellformedness constraints are ordered in a fixed hierarchy and maintain their relative ranking. However, this postulate of re-ranking faithfulness constraints opposes the traditional OT approach, which crucially claims the invariance of a constraint ranking in a given language. I assume the OT treatment of grammar in the following analysis. The adaption of loanwords to the borrowing language – the main argument in favor of a stratal approach – can be explained by means of (child) perception and auditory cues. Peperkamp et al. (2008:160) crucially note that

162 An altered proposal in the framework of Correspondence Theory (McCarthy & Prince 1995b) is the ‘strata-indexed faithfulness’ (Itô & Mester 1999) or ‘split faithfulness’ (Lee 2003:89) account. Instead of the re-ranking of one and the same IO-faithfulness constraint in dependence of the stratum, rather a specified, i.e. indexed, faithfulness constraint referring to each vocabulary sub-lexicon is proposed. In effect, the assumption of different cophonologies for each stratum is unnecessary. A single phonology is sufficient to describe the language-internal variation by means of “a unique set of ranked structural constraints, with stratically indexed faithfulness constraints interleaved at different points” (Itô & Mester 1999:76). The postulate implicitly made by this approach is that the native stratum is left unmarked while loanwords may be underlyingly marked twice: firstly for the stratum in order to determine which of the faithfulness constraints is applicable; secondly for the lexical stress. This is – at least for LG – an unnecessary complication.
“loanword adaptions reflect the average result of perceptual assimilation as found in most speakers.”

Returning now to the deviant stress pattern observable in the loanwords of Table 24 (b) and Table 26, I assume the surfacing of lexically pre-determined stress. Apoussidou (2007:11) describes lexical stress as “not (fully) predictable by the grammar”. A sequence of segments is marked for stress already in the input form. The foot structure and syllable structure is then assigned by the grammar, i.e. the constraint ranking. The faithfulness constraint that is arguably responsible for the emergence of the lexical stress in the surface form and the overt form is IDENT-STRESS I-O (further on ID-S). It determines that a stressed sequence of the input must be retained in the output (i.e. phonological surface form or phonetic overt form).

XVII) IDENT-STRESS I-O: A syllable that is stressed in the underlying form is also stressed in the surface form.

The loanword cases that have not yet been adapted to the LG stress system are most faithful to underlyingly present stress. None of the metrical constraints interfere and evoke a differing stress assignment. ID-S crucially outranks the wellformedness constraints, yielding ID-SR >> RH-TYPE=T >> [WSP, WEAKEDGE] >> PARSE (O) >> {RIGHT, PARSE (Σ)}. The result is that stress marks in the underlying form are kept and projected to the surface form and subsequently to the overt form. The position of the stress within the PrWd is irrelevant. Relating to the examples in Table 26, this means that the deviant stress of the loan words arises from lexical stress markings in the underlying form, which gives penultimate stress in words such as e.g. [zmˈbɾɛɾo] ‘sombrero-Sg.’ or [kˈjyt] ‘cabin-Sg.’. The according ranking of the CVC.CV.CV cases in Table 26 (b) is illustrated in Tableau 13.

Tableau 13. [zmˈbɾɛɾo] ‘sombrero-Sg.’

<table>
<thead>
<tr>
<th>CVC.CV.CV</th>
<th>ID-ST</th>
<th>RH-TYPE=T</th>
<th>WSP</th>
<th>WEAKEDGE</th>
<th>PARSE (O)</th>
<th>RIGHT</th>
<th>PARSE (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) (CVC.CV.CV)</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
</tr>
<tr>
<td>(b) CV.C.CV.CV</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
</tr>
<tr>
<td>(c) (CVC.CV.CV)</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
</tr>
<tr>
<td>(d) (CVC.CV.CV)</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
<td>![</td>
</tr>
</tbody>
</table>

163 For experimental data see Peperkamp et al. (2008), for a detailed analysis see Boersma (2007a), Boersma & Hamann (2008).
164 Inkelas & Orgun & Zoll (1997:410): “prespecification is the most constrained while simultaneously the only descriptively adequate way of handling lexical exceptionality to static patterns and alternations.”
165 See the faithfulness to stress constraints in Apoussidou (2007:22).
166 This solution must not be interpreted as ultimate. See the alternative approach suggested by van Oostendorp (1997).
The winner is naturally candidate (b) with the foot structure H(LL). Most importantly, it is faithful to ID-STR, i.e. keeps the stress markings of the input also in the output of the overt form. It violates WSP and WEAKEDGE each ones. Output (b) is at the same time harmonic with regards to RH TYPE=T, which determines that it outranks the iambic candidate (HL)L in d). The two crucially ranked constraints ID-STR and RH TYPE=T choose (b) also above the initially stressed candidates (a) and (c). Both competitors contain a stress shift from the penultimate to the antepenultimate syllable. They thereby fatally violate ID-STR, which excludes (a) (H)LLL and c) (HL)H as possible phonological surface structures. Without the crucial ranking of ID-STR, candidate (c) would of course win the tableau. It is faithful to RH TYPE=T and WSP. The three subsequent violations of WEAKEDGE, RIGHTM and PARSE (σ) are minimal compared to the other candidates.

A similar tableau with the individual stress marks in the input is valid for each of the polysyllabic cases in Table 26 as well as for the bisyllabic cases like [kaˈjyt] ‘cabin-Sg.’ in Table 24 (b). The result is always the same: the stress in the output matches the stress in the input. Tableau 14 demonstrates this again by means of the bisyllabic CV.CVC form [kaˈjyt] ‘cabin-Sg.’

Tableau 14. [kaˈjyt] ‘cabin-Sg.’

<table>
<thead>
<tr>
<th>CV:CVC</th>
<th>ID-STR</th>
<th>RH TYPE=T</th>
<th>WSP</th>
<th>WEAKEDGE</th>
<th>PARSE (σ)</th>
<th>RIGHTM</th>
<th>PARSE (Σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) (CV).CVC</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) <a href="CVC">CV</a></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) (CV.CVC)</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) (CV.CV)&lt;C&gt;</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The winner in (b) is the finally stressed L(H). Without lexically pre-determined stress on the ultima, WEAKEDGE would rule out this candidate and choose (d) (LL)<C> as the winner.

The constraint ID-STR is left untouched by forms that do not have lexically pre-determined stress. This guarantees that the grammatical stress pattern developed in the preceding sections is maintained. Only forms that have entered the lexicon and contain an underlying marking for stress will attain an effect of ID-STR.

For loanwords ending in an open syllable such as [ˈindostrɪ] ‘industry-Sg.’ this means that we obtain a final monomoraic foot. This is a structure that is usually deemed defective. Another possibility would be to assume – similar to van Oostendorp (1995) – the presence of ‘truly long’ (i.e. bimoraic) vowels in loans, thus differentiating between loan phonemes and native phonemes. The final open syllable of the ‘industry’-type loans would as a result be counted as heavy.

167
4.4. Conclusions on LG stress

We have seen in the previous sections that the pattern of LG primary word stress can be described by means of a fixed set of faithfulness and wellformedness constraints. The ranking developed for LG is given in (XVIII).

(XVIII)  \{SHSP, Non-Exhaustivity, MaxBin\} >>
         ID-STR >>
         RhType=T >>
         \{WSP, WeakEdge\} >>
         Parse (o) >>
         \{RightM, Parse (Σ)\}

This constraint hierarchy determines that the grammatical stress is assigned trochaically by means of syllable weight. CV syllables generally count as light. This means that the respective phonetically long vowels are monomoraic. Word-internal CVC syllables count as heavy. In polysyllables, their weight in word-final position basically depends on the segmental context. The superheavy syllables that may occur in final position in PrWds retain a heavy syllable status. Crucial is here the extrasyllabic position of the final consonant. The weight of the phonetically overlong tense vowels can be defined as bimoraic, yielding a heavy status of the CVV<C> sequence.

The stress assignment is such that if the penultimate syllable is (C)VC, stress goes there; if the respective penultimate syllable is (C)V the stress moves further to the left to the antepenult. The antepenult might then be either a (C)VC syllable or a (C)V syllable. Word-final stress occurs either in mono- and bisyllables that comprise a light initial syllable and a heavy final syllable, or in cases with final superheavy syllable. The preferred foot structure is a moraic trochee. All in all, the major part of the LG stress assignment is predictable by means of syllable weight in this way.

A subset of LG PrWds shows stress assignment that is insensitive to syllable weight. This is induced by the high ranked faithfulness constraint ID-STR. The constraint is triggered only by lexical marking for stress in input forms. I argue that loanwords like [zmˈbɾeɾo] ‘sombrero-Sg.’, [biˈkim] ‘bikini-Sg.’ or [kəˈʃiʃ] ‘cabin-Sg.’ comprise an underlying specification for stress on the penultimate syllable. Thus, ID-STR steps in, yielding overt forms that correspond to the underlying form with respect to primary word stress.