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

This dissertation covers the phonetic description of the issue of vocalic overlength in the three North Low Saxon dialects of Kirchwerder, Altenwerder and Alfstedt, and entails an overview on the linguistic literature on Low German dialects, a brief stress analysis, the phonological analyses of the vowel and consonant data, and a typological overview on languages featuring ternary length phenomena in the vowel system. The crucial findings for Low German phonetics (see chapter 3) and phonology (see chapters 4, 5 and 6) are briefly summarized below.

8.1. Low German Phonetics

The phonetic analysis provided in chapter 3 treats the production and perception of items with supposed overlong vocalic nucleus by Low German informants.

Two main questions were scrutinized with respect to the speech recordings of the three Low German dialects of Altenwerder, Kirchwerder and Alfstedt. The first question was whether there are stable durational contrasts between short vowels, long vowels, and hypothesized overlong vowels. The second question was whether distinct pitch contours are observable for long vowels (Stoßton or pushing tone) as opposed to overlong vowels (Schleifton or dragging tone). With regards to the traditionally assumed dragging tone, only one Altenwerder informant (i.e. the *motherese* speaker III.6.Aw) was identified as showing some minor cues in F0 variation within the given minimal pairs, i.e. between items with long vowel vs. supposed overlong vowel. No other Low German informant showed similar peculiarities.

It was found for all (complete) samples that the three expected length degrees (ELD) of the vowel system short (ELD 1) : long (ELD 2) : overlong (ELD 3) are kept statistically distinct. We observe mean ratios of 1 : 1.74 : 2.29 in the complete samples.

The quality of the coda consonant has a crucial effect on the duration of the preceding vowel in all of the minimal pair samples. The expected length degrees are kept distinct in the pre-obstruent cases of the four investigated samples, whereas only the Altenwerder informants maintain the durational difference also in pre-sonorant vowels. I assume that this contrast preservation in Altenwerder is phonetic rather than phonological. It was also found for the three Low German dialects that neither the vowel durations nor the sonorant consonant durations differ significantly in items with vowel-sonorant consonant sequences of the long length degree and the expected overlong length degree. The assumption of overlength in the combinations of vowel and sonorant coda is not warranted by any of the analyzed samples.

Besides the purely segmental interactions with vowel length, also the position of a word in the utterance can contribute to durational variations. We found for the samples of Altenwerder group 1, informant III.6.Aw, and Alfstedt that non-final items and final items differ durationally between expected long degree and expected overlong degree. A rather unexpected finding is made within the individual length
degrees. The well-known Germanic phenomenon of utterance-final lengthening was assumed to possibly enhance durations of segments in sentence-final tokens (Kohler 2002:388). Intriguingly, it is found for all four speech samples (i.e. Kirchwerder, Altenwerder group 1, informant III.6.Aw, and Alfstedt) that no statistically significant final lengthening occurs at all. The Kirchwerder data as well as the Alfstedt data exhibits only a very slight trend towards vowel lengthening in final position of one of the length degrees (i.e. in the overlong degree in Kirchwerder, and in the long degree in Alfstedt). The corpora of Altenwerder group 1 and informant III.6.Aw lean towards the opposite direction. In these two samples, the vowel durations of both expected long degree and expected overlong degree indicate a process of non-final lengthening (or final shortening), instead. The contrast of long vs. overlong in the monosyllables is, however, maintained at all times.

Turning to the perception study, fieldwork data from informants speaking the LG dialects of Altenwerder, and of Alfstedt, as well as on-line data from younger adults speaking LG and coming from Niedersachsen, Bremen, Mecklenburg-Vorpommern or northern Nordrhein-Westfalen were elicited in listening experiments (forced-choice setting, stimuli being manipulated with respect to vowel length and F0). In all samples we find rather high speaker-dependent effects. Two meaningful factors are obtained in the fieldwork tests and the on-line test: vowel duration and finality, the latter relating to the former due to the greater vowel length found in non-final items especially of Altenwerder Low German. The differences in vowel duration established in the production analysis for the expected length degrees long and overlong appear to have a functional load for the informants. This is in fact not too surprising since in all but the cases with mid vowels the conservative JND (just noticeable difference) of 20-25% of durational increase is exceeded in the recordings. The perceptibility of the difference was, thus, particularly likely.

A further perceptual cue for the Altenwerder informants as well as the participants of the on-line test appears to be the coda consonant (obstruent consonant vs. sonorant consonant). Words with final obstruent are preferably categorized as long degree-item in Altenwerder (though the trend is only weakly manifested) and as overlong degree-item in Alfstedt. By comparison, sonorant codas yield rather evenly distributed choices for both length categories.

The artificial F0 contours never conspicuously constitute relevant predictors for the responses. This is also true for the answers delivered by informant III.6.Aw. Her perception data do not indicate a differentiation between the speech items by means of the varying pitch contours.

We can conclude that in the investigated Low German dialects the indicated pitch contours do not at all play a role in the perception and distinction of the given minimal pairs. The assumption of tonal accents (TA1 and TA2) is not vindicated by the data. Instead, it is indeed the vowel duration, which allows for a differentiation between phonetically long and overlong speech items. Therefore, the data conducted

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329 Bear in mind that the speech data used in the perception tests always contains only one kind of obstruent, i.e. either fortis obstruents in experiment 1 or lenis obstruents in experiment 2. Only the vowel is manipulated qua duration and F0 contour.
for the current study pinpoint the presence of overlong vowels and diphthongs as a phonetic reality in Low German.

8.2. Low German Phonology

I complemented the phonetic findings of three durational categories in the vowel system by an analysis of the Low German stress pattern in chapter 4. The result is such that the quality of the vowel, being tense or lax, is of no relevance for the syllable weight. Both vowel qualities count the same. This is detectable by the grammatical stress that is assigned trochaically by means of syllable weight. Consonant-vowel (i.e. CV) syllables generally count as light. Word-internal CVC syllables count as heavy. Their weight in word-final position depends in polysyllables basically on the syllabic context. The ‘superheavy’ syllables count as heavy. 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 system already indicates a surface weight distinction in Low German vowels. While phonetically short lax vowels and phonetically long tense vowels are light, the phonetically overlong tense vowels count as heavy. We reach a binary weight contrast that can be expressed in terms of morae as monomoraic vs. bimoraic (see chapter 5). On top of this opposition, we find a quality contrast lax vs. tense that distinguishes the short and long vowels. The underlying weight of the Low German vowels is, however, generally monomoraic. Lax vowels may not become bimoraic by virtue of the OCP (Obligatory Contour Principle) in conjunction with the inherent requirement to not occur in open syllables. The second mora in the overlong vowels is assigned at the surface level by means of the moraic (allo)morpheme. We therefore do not find an underlying quantity contrast in the investigated Low German dialects of Kirchwerder, Altenwerder and Alfstedt, and probably North Low Saxon in general. The language system comprises two surface phonological degrees of vowel length whilst showing evidence for three phonetic (i.e. overt) steps of vowel duration short – long – overlong.

It is the presence of a moraic (allo)morpheme that supplies the structural material to effectively perform the lengthening of the vowel. The emergence of the surface binary quantity opposition is determined by the structural properties of the consonant following within the same syllable (see chapter 6). The fortis consonants and sonorant consonants do not allow the association of the moraic (allo)morpheme to the preceding nucleus, thus inhibiting the development of phonetic overlength. Only the lenis consonants enable the spreading of the moraic (allo)morpheme and the resulting vowel lengthening. These observations relate to the structural complexity of the consonantal segments. Both fortis consonants and sonorant consonants have a structurally enriched root node; the former by means of a laryngeal specification, the latter by means of the [SV] (sonorant voice) node. This can be seen as the reason why they are inherently moraic, and why they are able to block the association of a moraic (allo)morpheme to the preceding vowel. The lenis consonants are by comparison structurally poor. They do not require a mora and do
not lengthen the preceding vowel by themselves. Rather, they enable the lengthening process.

I have expressed this behavior by means of a constraint hierarchy, assuming that some constraints need to be crucially unranked. This does not produce variation as in the partial rankings of Anttila (1995, 2006), because the unranked constraints are of equal importance. As an effect, they are evaluated in parallel. An overview of the constraint hierarchy is provided in Figure 87.

Figure 87. Hasse diagram of the Low German constraint ranking

I add only two new constraints to the total set of constraints: FORTIS-µ and SON-µ. They do not dominate any constraints in the ranking. If they were ranked high in the hierarchy, the result would be that fortis consonants and sonorant consonants could never be left unparsed. These segments would always require a mora, and hence necessitate being syllabified and footed. A possible effect would be the violation of the principle of MaxBin, e.g. in items ending in consonant clusters.

An additional effect of the ranking is the possibility of monomoraic feet in Low German. Forms like /kat/ ‘cat-Sg.’ with a phonetically short lax vowel and a following fortis coda consonant are bimoraic, whereas forms like /huz/ ‘house-Nom.Sg.’ with a phonetically long tense vowel followed by a lenis consonant a monomoramic. This means in these cases that the former items are heavy while the latter items are light. This may appear somewhat counter-intuitive from a purely phonetic point of view. It has, however, been demonstrated by the stress analysis that we do not find a difference in weight between short lax and long tense vowels inspite of the occurring durational discrepancies. While phonetics can be assumed to permit some conclusions for phonology, the connection between the different levels of representation is rather indirect. We do not find a one-to-one relation.
8.3. Outlook

This dissertation is restricted to the investigation of monosyllabic forms in sentence focus and under declarative intonation. The elicited corpus contains, however, more data. Monosyllables in unfocused position under declarative intonation, and in focused and unfocused position under interrogative sentence intonation have not been analyzed so far. Especially the latter context has not been described in the scientific literature up to now. In order to establish a conclusive picture of the prosodic system of Low German, it is indispensible to investigate also the question intonation.

Intriguingly, a preliminary inspection of four minimal pairs produced by informant I.3.Aw in focused-final interrogative sentence context show indeed differences in the F0 contours.

Figure 88. Focused-final interrogative contours of informant I.3.Aw

The items with a long vowel (ELD 2) appear to have a rising L*H% contour on the rhyme, while the items with an overlong vowel (ELD 3) appear to have a falling-rising HL*H% contour on the rhyme. It is unclear, whether this behavior is merely a speaker-dependent variation or representative of an overall pattern. Alas, I have to leave this matter for future research.
8.4. Closing remarks

“We shall not cease from exploration, and the end of all our exploring will be to arrive where we started and know the place for the first time.” (T.S. Eliot)

The first and foremost goal of this investigation was to establish whether it is tone, quantity, or something else that is the primary prosodic feature in Low German dialects. All in all, I have shown that Low German employs a combination of vowel quality and vowel quantity, which carries functional load. It is a binary phonological system accounting for the given phonetic facts of the ternary vowel duration in Low German. Pitch plays no role with respect to the perception of lexical or morphological contrasts in the investigated Low German dialects (at least under declarative sentence intonation and in focused position). Thus, considering the question which of these suprasegmentals has phonemic status in Low German, i.e. may be termed prosodeme, we were able to conclude that tone accent does not qualify as having prosodeme-status. In order to decide between quality and quantity, then, we had to consider the different levels of representation (Apoussidou 2007, Boersma 2007a) and possible contextual influences on vowel duration.

I pointed out a crucial distinction between fortis vs. lenis consonants by means of laryngeal specification vs. underspecification and, hence, structural complexity of the segments. It is this complexity opposition in the coda consonants, which has a profound impact on the vowel duration of a preceding nucleus. As a diachronic rule of thumb, we find no overlength after apocope of final schwa if the coda is structurally complex (i.e. fortis or sonorant). Only if the coda is structurally simplex (i.e. lenis), a preceding long vowel lengthens to overlong after apocope. This qualitative contrast ultimately allows for a binary explanation of phonetic overlength in Low German (Kohler 2001). In effect, we arrive at a phonological surface opposition of monomoraic vs. bimoraic and lax vs. tense in the vowel system, and of laryngeally specified vs. unspecified in the consonant system. Therefore, both quality and quantity are established as prosodemes in Low German.

Underlyingly, no quantity contrast exists in Low German, all vowels being simply monomoraic. What remains is quality.

With the data and analyses presented in this thesis, Low German falls in the category of languages featuring three phonetic degrees of vowel length that can be traced back to a binary contrast at the surface level (e.g. Mayo, Mixe, Central Franconian). No ternary quantity system is required.