

Dialect variation in East Norwegian tone

Gjert Kristoffersen

Dept. of Scandinavian Languages and Literature

University of Bergen

Gjert.Kristoffersen@nor.uib.no

In recent analyses of Scandinavian tonal accent, two competing hypotheses can be identified, the privativity hypothesis and the timing hypothesis.¹ The more widespread is the privativity hypothesis, which assumes that the difference between the accents consists in accent 2 having an initial, lexical tone that is absent from accent 1. Otherwise the melodies are identical. Due to greater, structural complexity, accent 2 is furthermore regarded as the marked member of the contrast. The timing hypothesis on the other hand assumes different timing of identical melodies to be the essence of the contrast. In this chapter, I argue that when East Norwegian dialect data are taken into consideration, the timing hypothesis appears as the only one that allows for a unified analysis of the differences between the three dialects discussed. At the input level, the three dialects are assumed to have the same melody. The well established privative pattern of Urban East Norwegian (UEN) emerges as a surface phenomenon that is the result of a constraint that bans low tones from metrical heads. The surface timing patterns of the two other dialects, North Gudbrandsdal and Oppdal can be accounted for by minimal adjustments of the UEN grammar.

Keywords: Scandinavian tonal accent, tone, markedness, dialect variation, Norwegian

Languages mentioned: Norwegian, Swedish

1. Introduction

The study of fine-grained dialect variation with respect to tonality in Norwegian has till now been hampered by lack of sufficiently detailed and comparable data from the different dialects. While Urban East Norwegian, spoken in Oslo and other South East Norwegian towns, is relatively well studied (see e.g. Haugen and Joos 1952; Haugen 1967a; Withgott and Halvorsen 1988; Kristoffersen 2000), our knowledge of other varieties is often much more rudimentary. Hence the possibility of constructing valid typologies has been limited.

Data on tone in other Norwegian dialects are sparse, but two recent in-depth studies are available, one of the town dialect of Egersund in the South West (Hognestad 1997) and one of the Sunnmøre dialect on the North Western part of Southern Norway (Abrahamsen 2003). In addition, the discussions of the West Norwegian Bergen variety published in Lorentz (1981; 1984; 1995) and Kristoffersen (2006c) have considerably increased our knowledge of that variety.

Based on the data established in these works and the corresponding literature available on Swedish varieties, it has been proposed that the Scandinavian accentual contrast is a privative one, in that accent 2 in all varieties contains a lexical tone that is absent from the accent 1 melody (Riad 2003: 92). For example, the Urban East Norwegian accent 2 melody is HLH, while the accent 1 melody is LH. The corresponding West Norwegian Bergen melodies are LHL and HL. Hence, in Urban East Norwegian the lexical tone is H, while in Bergen it is L.

The aim of this chapter is to question this hypothesis by introducing data from two East Norwegian dialects that resist the privativity analysis. The two melodies in these dialects appear as identical, so that the basic accentual contrast instead arises from different timing of the tones that make up the melodies. These dialects therefore seem more amenable to an analysis based on the other approach to Scandinavian tone currently in circulation, the so-called timing hypothesis, where the contrast is seen as arising from different timing of identical melodies. Gösta Bruce's (1977) influential analysis of Stockholm Swedish is the most prominent representative of this approach, reiterated and elaborated in e.g. Gussenhoven and Bruce (1999) and Gussenhoven (2004: 210–217).

The implication of Gussenhoven's (2004) analyses of Stockholm Swedish and East Norwegian is that Scandinavian tonal dialects come in two types, those that belong to what we may call the privativity type and those that belong to the timing type. Urban East Norwegian (henceforth UEN) belongs to the former group and Stockholm Swedish to the

latter. However, the two other East Norwegian dialects analyzed in this chapter also belong to the timing type. This means that the division between privativity and timing extends into East Norwegian. This is not a welcome result. As we shall see below, the phonetic output in the three dialects is quite similar, apart from the surface privativity in UEN. We should therefore explore the possibility of subsuming them under a common, analytical framework before we conclude that they are as radically different as the privativity/timing split makes them appear.

In this chapter, UEN will, in accordance with Kristoffersen (2006b) be analyzed as a timing dialect at the input level, where the tonal input for both accents is identical and where the surface privativity follows from the grammar. This analysis will then be extended to cover the two other East Norwegian varieties, North Gudbrandsdal (NGbr) and Oppdal. It will be shown that the tonal grammars of the three varieties can be accounted for with minimally different grammars, as would be expected when closely related dialects are analyzed. At the same time the analysis represents a radically new analysis of Scandinavian tone in that accent 1 instead of accent 2 emerges as the marked member of the contrast, in accordance with the conclusions in Lahiri, Wetterlin and Jönsson-Steiner (2005) and Kristoffersen (2006b).

The chapter is organized as follows. In section 2 we take a closer look at the privativity and timing approaches. In section 3 we look at the phonetic differences between the three dialects. The unifying analysis is presented in section 4, and in section 5 the possibility of extending the analysis to Swedish is briefly discussed. The chapter is concluded in section 6.

2. Privativity vs. timing

2.1. The privativity hypothesis

By the early 1990s, the fact that accent 2 in many dialects is phonetically more complex than accent 1 had been translated into the phonological assumption that the accent 2 melody contains an initial, lexical tone that is lacking in accent 1, see e.g. Kristoffersen (1993; 2000: 252–253), Lorentz (1995) and Riad (2003). Except for the initial lexical tone of accent 2 the accent 1 and accent 2 melodies are identical. If we take UEN as an example, the accent 2 melody is HLH, while the accent 1 melody is LH, as shown in the preceding section. Due to its more complex melody, accent 2 is therefore held to be the marked member of the opposition (Haugen 1967b: 188; Bruce and Hermans 1999: 623).

2.2. The timing hypothesis

Under the timing hypothesis, accent 1 and 2 have identical melodies. The best known analysis based on this view is the analysis of Stockholm Swedish (Bruce 1977; Gussenhoven and Bruce 1999; Gussenhoven 2004), where both melodies are HLH(L). The contrast emerges as a result of different timing of the melodies, encoded by marking the initial H and the L respectively with an asterisk, signaling precedence of association to the stressed syllable, or by pre-linking. H*LH accordingly represents accent 2 while HL*H represents accent 1.

2.3. Choosing between timing and privativity as a general hypothesis

A problem connected with the timing hypothesis as a general phonological analysis of Scandinavian tone is that it is difficult to find solid evidence for identical melodies in all varieties. This is for example the case for Urban East Norwegian, as pointed out already. No one has to date therefore proposed this approach as a possible foundation for an analysis that would cover all the tonal varieties of Norwegian and Swedish.

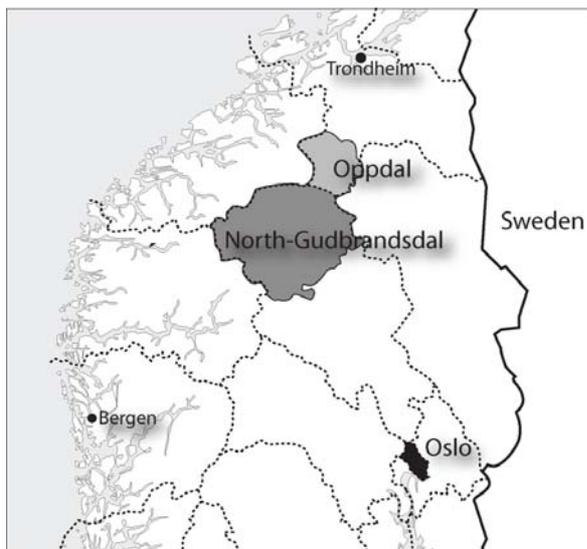
The privativity hypothesis seems at the outset to be a better candidate. The timing-based analysis of Stockholm just referred to represents a problem, however, since the initial H tone of the accent 1 melody, which will coincide with the pre-stress syllable if one is available, is difficult to account for. But the interpretation of Stockholm data is not unequivocal. Engstrand (1995; 1997), based on experimental as well as spontaneous data, finds no clear evidence for there being an initial H tone in accent 1 in Stockholm. To the extent that this is right, this makes Stockholm another dialect that can be accounted for by the privativity hypothesis.

In fact, all other varieties that till now have been thoroughly studied from a phonological point of view, viz. Bergen Norwegian (Lorentz 1995), Egersund (South West Norway) (Hognestad 1997), Sunnmøre (Northwestern Southern Norway) (Abrahamsen 2003) and UEN (Kristoffersen 1993; 2000), can be analyzed as privative varieties. The only researcher who has ventured a comprehensive comparative phonological analysis of Scandinavian tone, Tomas Riad (Riad 1996; 1998; 2003), indeed bases his analysis on this assumption. In (2003: 92) he states that “[t]he opposition is always a privative one, where accent 2 contains a lexically specified tone and accent 1 lacks such a specification”.

2.4. Identical melodies: A challenge for the privativity hypothesis

Any dialect that manifests fully identical surface melodies will pose a serious problem for the privativity hypothesis as a general theory of Scandinavian tone, since the defining feature, privativity, is no longer present. Until recently, Central (Stockholm) Swedish has been the only dialect that has been claimed to have identical, underlying melodies. However, in Kristoffersen (2006a), I argue that the two East Norwegian dialects, Nord-Gudbrandsdal and Oppdal should be analyzed as having identical melodies. Both accent 1 and 2 manifest HLH melodies, with different timing of the HL part as the factor that distinguishes the accents. These varieties are therefore difficult to account for by the privativity hypothesis. The analysis developed below will show that it is indeed possible to relate them all as instances of the same type, with identical input melodies, and minimally different constraint hierarchies. This implies that at the input level, all three dialects are analyzed as instantiations of the timing type.

A map showing the locations of NGbr and Oppdal in relation to Oslo to the south and Trondheim to the north is provided in Figure 1. UEN is spoken in the cities in the Østlandet region south of NGbr, the most important of them being the capital, Oslo.



(Map by K.H. Sjøstrøm, University of Bergen)

Figure 1: Map of central part of Southern Norway

3. Phonetic realization of tone in UEN, NGbr and Oppdal²

3.1. Data

As stated above, only short domains will be discussed in this chapter. Table 1 contains examples. In order to simplify the exposition, I have chosen examples that have the same pronunciation in the three dialects.³

<i>Domain type</i>	<i>Examples</i>
Monosyllabic accent 1	¹ si:l, <i>sil</i> ‘a strainer’
Disyllabic accent 1	¹ si:l]ɑ, <i>sila</i> ‘the strainer’ ¹ si:lu, <i>silo</i> ‘silo’
Disyllabic accent 2	² si:lə, <i>sile</i> ‘to strain’ (UEN and NGbr) ² si:lə, <i>siler</i> ‘strainers’ (Oppdal)

Table 1: Data

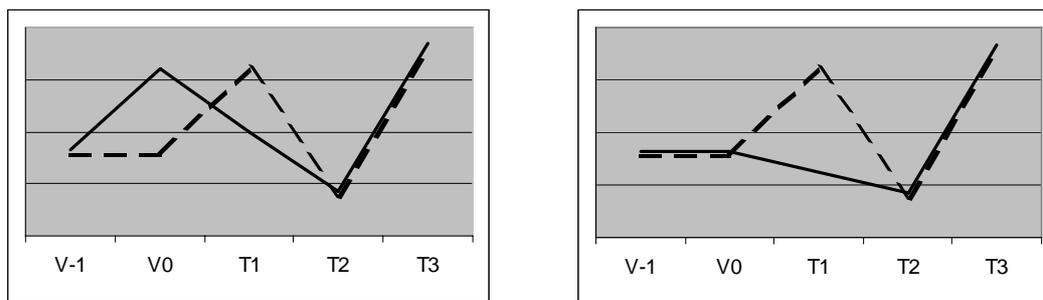
3.2. Method

I assume that if there is an initial H in accent 1 on the pre-stress syllable as part of the accentual melody, it can only be detected if we can be reasonably sure that the syllable preceding the stressed, accented syllable does not carry a high tone that can have other origins, e.g. as a final boundary tone at the right edge of a preceding accent phrase. The data from all three dialects have therefore been taken from accented words read in carrier sentences with at least two utterance-initial unstressed (anacrustic) syllables. Since absence of stress implies absence of accent, we can be reasonably sure that there are no phonological high tones associated with these syllables that appear independently of the following accentual melody. In other words, any presence of a high tone on the pre-stress syllable in this environment in accent 1 will represent strong evidence in favour of there being an initial H also in the accent 1 melody. Conversely, absence of such a tone will represent evidence for there being no such tone as part of the accent 1 melody.

When appropriate F₀ measurements are taken across domains with these structural properties, we would expect results similar to those shown to the left in Figure 2 if the timing

hypothesis is right, and results similar to those shown to the right if the privativity hypothesis is correct.

The measuring points used in Figure 2 were the midpoints in two unstressed, pre-stress syllables (V-1 and V0) plus three measurements taken in the accented word. In accent 2 words, the initial and final peaks were measured as realizations of the initial and final H of the HLH melody, and the intervening trough as realization of the intervening L. These were coded T1, T2 and T3 respectively. In accent 1 words the corresponding trough and final peak were measured as T2 and T3, i.e. as realizations of the LH accentual melody that is realized within the accented accent 1 word. In addition, the F_0 value at the beginning of the stressed vowel was measured and coded as T1 in accent 1 words. Since no phonological tone is assumed at this point in accent 1, we will expect interpolation between V0 and T2 here, as shown in both graphs in Figure 2.



a) Timing hypothesis

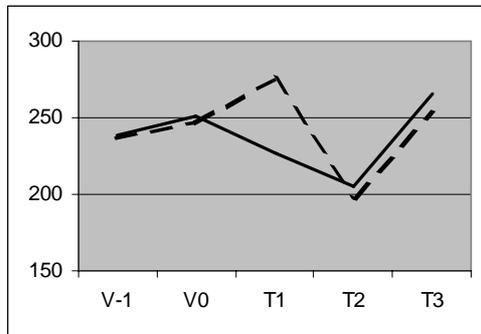
b) Privativity hypothesis

Figure 2: Alternative hypotheses. Solid line = accent 1, broken line = accent 2

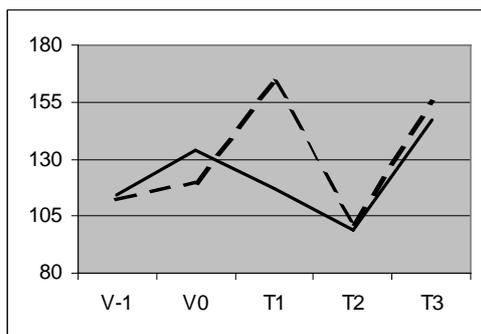
3.3. Results

The average F_0 value at each measuring point is given in Figure 3. For UEN, we see that the results closely resemble those shown in Figure 2b, since there is no difference between the values at V0, and since we find interpolation between V0 and T2 in accent 1. Only the T1 point, where the F_0 value at the beginning of the stressed vowel in accent 1 words is compared with the F_0 value of the initial tonal peak in accent 2 words, shows a difference, as would be expected. This is in other words as predicted by the privativity hypothesis, but unexpected if we go by the timing hypothesis. It supports the commonly held hypothesis that in Urban East Norwegian, there is no initial pre-stress H in the accent 1 melody, since we would have

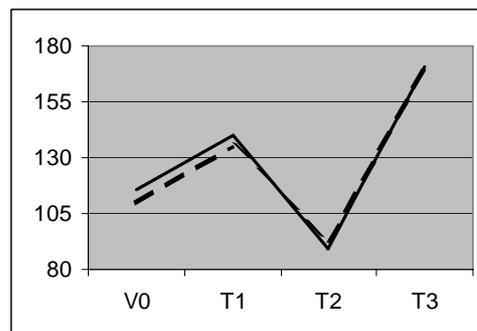
expected such a state of affairs to be reflected in a significant difference between the mean F_0 values on the pre-stress (V0) vowel.



a) UEN



b) NGbr



c) Oppdal

Figure 3: F_0 measurements from UEN, NGbr and Oppdal. Solid line = accent 1, broken line = accent 2

Figure 3b shows the F_0 trajectories through the measuring points for the NGbr data. If we compare this pattern both with UEN and with the one we would expect if there were an H linked to the pre-stress syllable, shown in Figure 2a, we see that there is indeed a peak at V0 in accent 1. This peak could be the realization of an initial accent 1 H. A possible problem is that it is much lower than the one that represents the accent 2 peak on the stressed syllable. This difference could reflect a difference between stressed and unstressed syllables, however, given the fact that tone may be used to enhance prosodic prominence. The fact that the difference is significant at the $p < .001$ level (one-way ANOVA, see Kristoffersen 2006a) allows us to conclude with a fair amount of confidence that there *is* a difference with respect

to underlying tonal specification on the pre-stress vowel between the two accents. Of course it does not follow by necessity that the difference is caused by the presence of an H on the pre-stress syllable in the accent 1 set. But it is difficult to see any other factor that could be responsible for this difference. If it were caused by an intonational tone, e.g. an utterance initial boundary tone, we would expect this to show up on the initial syllable, and not on the second, and we would further expect it to show up irrespective of accent type. If this analysis is correct, NGbr represents a dialect that conforms to the timing hypothesis, and not to the predictions that follow from the privativity hypothesis.

The results for Oppdal are given in Figure 3c. Here we see that the F_0 -averages at the T1 position are identical. But this does not mean that there is no accentual contrast in Oppdal. Recall that the measuring point T1 is not exactly the same for the two accents. For accent 1, it is the beginning of the vowel irrespective of there being a peak or not, while for accent 2, it is the initial peak of the accent 2 curve, which is not necessarily located at the beginning of the vowel. In order to see how the accentual contrast is realized in Oppdal, we now need to look at the actual F_0 contours.

3.4. A closer look at actual tonal contours

To the extent that there is an accentual contrast in Oppdal, the contrast must reside in different timing of the tones with respect to each other. That this is in fact the case is shown in Figure 4, which shows a pair of representative disyllabic contours for the two accents, both starting at the onset of the vowel of the unstressed syllable preceding the stressed one. The fact that the contours are discontinuous is due to the onset consonants of the stressed words being voiceless.⁴

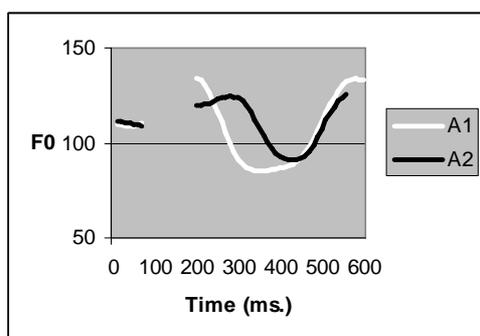


Figure 4: Tonal accent contrast in Oppdal

We see that there is no F_0 difference on the pre-stress vowel. In both accents there is a rise to a peak in the stressed syllable. In accent 1 F_0 peaks at the start of the vowel, while in accent 2 it is sustained (and slightly raised) for about 100 ms before it starts falling. This strongly suggests that while the Oppdal dialect must be assumed to have a HLH melody for accent 1 as well as accent 2, it is different from NGbr in that the initial H in both cases is realized on the stressed syllable.

Representative contours from UEN and NGbr are shown in Figure 5.⁵ Also here we see the stylized differences shown in figure 3 above reproduced. The UEN contrast in 3a can be associated with two properties. First, there is a clear difference in F_0 level at the onset of the stressed vowel, marked with a vertical bar. Second, the initial H of accent 2 causes a timing difference with respect to the L. In accent 1, the L-phase is reached by the second half of the stressed syllable while in accent 2 it will normally coincide with the initial phase of the second, unstressed syllable. We also see that there is no initial peak in accent 1 contour that can be interpreted as manifesting the presence of a pre-stress H.

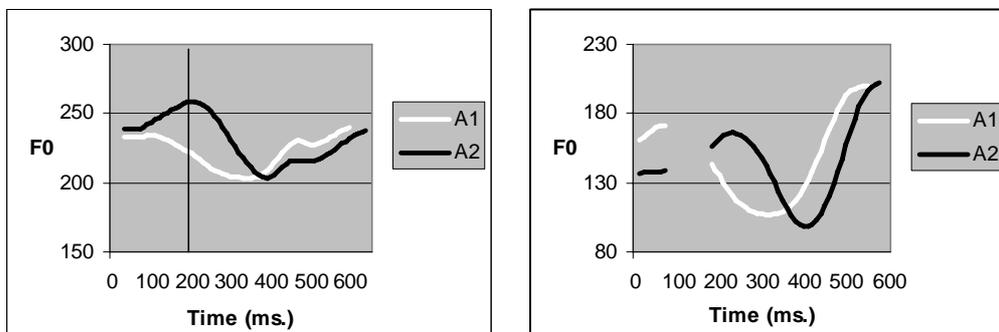


Figure 5: Tonal accent contrasts in UEN and NGbr

The same points can be made with respect to the NGbr contours, except that there is, as expected, a peak on the pre-stress syllable in accent 1, and that the accent 2 H peak seems to occur somewhat later than in UEN with respect to the onset of the stressed vowel. This makes NGbr appear as an intermediate type between UEN and Oppdal, in that the initial accent 2 peak is somewhat delayed compared to UEN, but starts falling earlier compared to Oppdal.

3.5. Representing the differences

We can now construct autosegmental representations of the tonal accent contrast in the three dialects that will render more clearly the differences that must be accounted for in the phonological analysis that follows.

In Figure 6 the contrasting melodies are associated with a four syllable domain consisting of an unstressed syllable followed by a stressed syllable and another two unstressed syllables. The accent 1 melodies are shown above the string of TBUs, while the accent 2 melodies are shown below. Based on the data presented above, the TBU is assumed to be the syllable in UEN and NGbr, while the mora is assumed to be the TBU in Oppdal.⁶

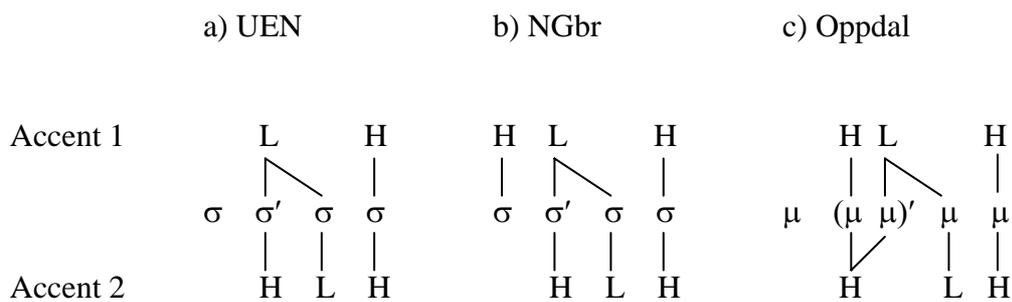


Figure 6: Autosegmental representations of the UEN, NGbr and Oppdal tonal accent contrasts in polysyllabic domains

We see that only UEN manifests a surface privative pattern. For the two others, the difference between the accents consists of different association patterns of identical melodies. For NGbr this melodic property emerges only when there is a free TBU preceding the stressed syllable.⁷

3.6. Monosyllabic domains

An important feature of most Scandinavian tonal systems is that the contrast between accent 1 and accent 2 is normally absent in monosyllabic domains.⁸ The actual melody found

here is identical to a compressed accent 1 melody, and in most post-structuralist work, it has indeed been analyzed as accent 1.

Representative examples of the melodies found in monosyllabic domains are given in Figure 7. In order to test whether the initial H in NGbr and Oppdal turns up in this environment, examples with two unaccented pre-stress syllables have been used. The stressed syllables are accordingly the rising contours that begin slightly later than the 300 ms point.⁹

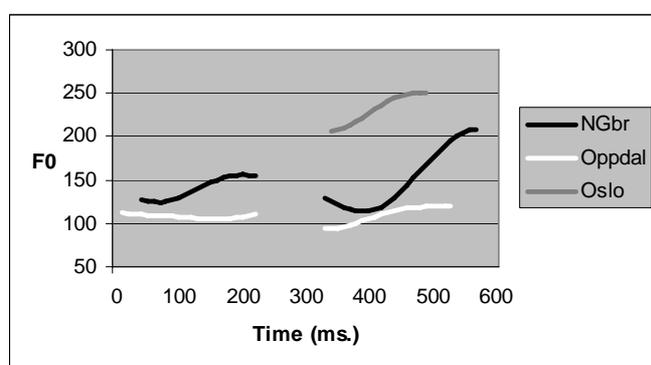


Figure 7: Tonal melodies in monosyllabic domains

We see that for all three dialects, the most plausible interpretation of the melody across the stressed syllable is that it represents a LH contour.¹⁰ We also see that only in NGbr does a peak turn up on the pre-stress syllable.

Phonological representations corresponding to those in Figure 7 are given in Figure 8. We see that for UEN and NGbr, we are dealing with the same structures as those established for realizations of polysyllabic accent 1 in Figure 6 above. For Oppdal, however, the melody is simpler, in that the initial H found in polysyllabic domains is absent. This in fact corresponds to the distinction between POLYSYLLABIC and MONOSYLLABIC accent 1 that is often mentioned in traditional descriptions of northern varieties of East Norwegian dialects, see Kristoffersen (1992) and references cited there. Here polysyllabic accent 1 is described as having an initial fall absent in monosyllabic accent 1. Oppdal is one of the southernmost dialects of this group.

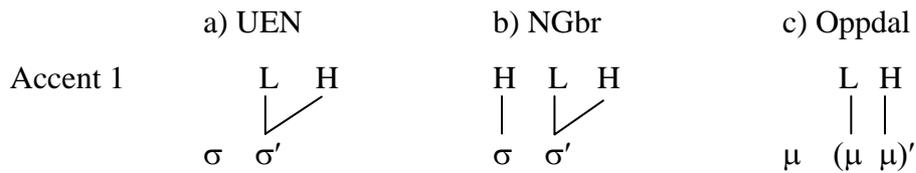


Figure 8: Autosegmental representations of UEN, NGbr and Oppdal tonal accent in monosyllabic domains

3.7. Conclusion

In this section we have reviewed the phonetic data from three East Norwegian dialects: UEN, NGbr and Oppdal. We have seen that accent 2 is almost identical across the three dialects, in that they all manifest an HLH melody with the initial H linked exclusively to the stressed syllable.

Oppdal and NGbr are characterized by an HLH melody in accent 1 as well. The contrast between the two accents thus resides in different timing in these dialects. While the initial H in NGbr is linked to the stressed syllable in accent 2, the initial H of accent 1 falls on a pre-stress syllable if available, leaving the stressed syllable for the L. In Oppdal, the H and L share the stressed syllable in (polysyllabic) accent 1, in opposition to accent 2 where the H alone is linked to the stressed syllable. Before monosyllabic domains the pre-stress H in NGbr is preserved, while the initial H found on the stressed syllable in polysyllabic accent 1 domains in Oppdal, is absent from monosyllabic domains. UEN on the other hand is consistently characterized by different melodies, in that the accent 1 melody lacks an initial H in all environments.

The conclusion that follows from this is that neither the privativity nor the timing hypothesis can account directly for all the East Norwegian surface data presented. One possible conclusion would be that we are in fact dealing with different systems that require radically different analytical solutions. But we have seen that there are basic similarities between the systems that might go unnoticed if such a strategy were adopted.

The property that can be generalized across the three dialects is the delayed-L effect, that is, L on the stressed syllable in accent 1 and L on the post-stress syllable in accent 2. A unified analysis that at the same time can account for the delayed L effect of all three dialects as well as for the presence of the privative H in UEN, would clearly be superior to an analysis where the common delayed L effect is hidden behind an initial division into a “privativity” type and a “timing type”.

4. Analysis

The basic assumptions of the analysis that follows are that the two accents are derived from the same underlying melody $L^* H\%$, and that the presence of an H on the stressed and an L on the post-stress syllable in accent 2 is caused by a markedness constraint that optimizes high tones on stressed syllables. In polysyllabic accent 1 this optimal distribution is blocked by the low tone being linked to the stressed syllable in the input.

The analysis is as an extension of the Optimality theoretic analysis of UEN tone given in Kristoffersen (2006b). Although no tableaux will be included in the present chapter, exposition as well as arguments will be couched within the OT paradigm. A full OT analysis of NGbr and Oppdal must for reasons of space be postponed to a later paper.

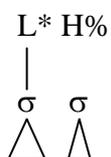
4.1. The UEN grammar

The following brief outline of an UEN tonal grammar is a summary of Kristoffersen (2006b), to which the interested reader is referred for details and more carefully worked out arguments. Hopefully, it will all the same become clear that this analysis easily can be extended to the two timing dialects introduced in this chapter, thus opening up for a unified analysis of East Norwegian tone.

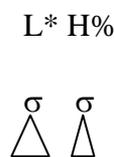
4.1.1. A common underlying melody

For both accents, one underlying (intonational) tune, $L^* H\%$ is assumed. The accentual contrast is accounted for by pre-linking of the L^* to the stressed syllable in polysyllabic accent 1.¹¹ Unmarked accent, i.e. accent 2 in polysyllabic domains and accent 1 in monosyllabic domains, can be derived by association and markedness constraints only, without pre-linked tones in the input. Input representations of a (near) minimal pair, $[\text{svim.m}\downarrow]$, *svimmel* ‘dizzy’ vs. $[\text{him.m}\downarrow]$, *himmel* ‘sky’, are shown in Figure 9.

a) accent 1



b) accent 2



svim.m̩

him.m̩

Figure 9: Input representations of accent 1 and accent 2

4.1.2. Unmarked accent

In Kristoffersen (2006b) unmarked accent is claimed to be accent 2 in polysyllabic domains and accent 1 in monosyllabic domains. The initial H of accent 2 in the former is derived by a high-ranking constraint, *HD_{MAX}/L: No low tones on maximal heads (de Lacy 2002).

Combined with another high-ranking constraint, SPECIFY-T_{AP}, which says that a TBU within an accent phrase must be associated with a tone, this optimizes insertion of a high tone on the head, thus relegating the input L* to the nearest following unstressed syllable. Since there is no other syllable than the head that can accommodate the input L* in monosyllabic domains, insertion of an H does not improve the output in these cases, and therefore the maximally faithful output prevails in this domain type instead.

4.1.3. Marked accent 1 in polysyllabic domains

Accent 1 in polysyllabic domains is the result of pre-linking L* to the stressed syllable in the input, combined with a top-ranked faithfulness constraint, MAXLINK-L*, which forbids dissociation of a pre-linked L*. This constraint crucially dominates *HD_{MAX}/L, so that the ultimate effect is that H-insertion, and thereby accent 2, is blocked. Accent 1 in polysyllabic words thereby emerges as the marked option in the sense that part of the distribution of tones is encoded directly in the relevant lexical entries in order to avoid surface forms with (unmarked) accent 2. This classification, where monosyllabic accent 1 and polysyllabic accent 2 are unmarked in opposition to marked, polysyllabic accent 1, as mentioned above, represents a radical revision of the classification into unmarked accent 1 and marked accent 2 assumed in previous analyses based on privacy. It supports the analysis proposed in Lahiri et al. (2005), where accent 1 is argued to be the marked member of the accentual contrast, although from a different analytical perspective than the one taken here.

The important features of the UEN grammar that can be extended to the two other dialects are summarized in (1).

(1)

1. Common input melody L*H%.
2. Monosyllabic accent 1 and disyllabic accent 2 are derived by means of ranked markedness and association constraints only and therefore emerge as unmarked. The most important constraint in this connection is *HD_{MAX}/L, which bans low tones on maximal heads, and thereby indirectly promotes insertion of high tones on heads.
3. Accent 1 in domains where accent 2 would be the unmarked option, requires lexical pre-linking and protection by a faithfulness constraint, and therefore emerges as the marked member of the tonal accent contrast.

4.2. The Oppdal dialect

Mainly due to the fact that the tonal contrast is limited to main stressed syllables in Norwegian and Swedish, some recent works hold that the TBU in Scandinavian is the stressed syllable only (Gussenhoven and Bruce 1999; Riad 2003; Gussenhoven 2004). In opposition to this view, syllables and moras are held to be the relevant TBUs in this chapter.¹² A central argument for this position is that the tonal grammar of Oppdal falls out directly if we posit the mora as the relevant TBU in Oppdal, and the syllable in UEN and NGbr. The latter was presupposed in the sketch of UEN above, but can now be made explicit.

The main argument in favour of the syllable as TBU in UEN is the tonal pattern of accent 1 in polysyllabic domains. As can be seen from Figure 5, the F₀ contour reaches its minimum late in the stressed syllable. Within a moraic analysis this pattern could have been captured by assuming the L* to be pre-linked to the second mora only, leaving the initial mora unspecified in the input. In order to satisfy SPECIFY-T_{AP}, which as noted above says that a TBU within an accent phrase must be associated with a tone, this mora must be tonally specified in the output. This is not the case however. As is clearly shown in Figure 5, the F₀ contour through the first part of the stressed syllable is an interpolation between the preceding unstressed syllable and the minimum value near the right edge. There is in other words no phonetic evidence for there being a tone, be it H or L, associated with the initial mora.

Another prediction that falls out from a moraic analysis is that the initial H of accent 2, due to it being associated with both moras, should describe a plateau through the stressed

syllable. This is neither the case in UEN, the F_0 describes a sharp fall through the stressed syllable towards a minimum early in the following unstressed syllable.

While these arguments show that a moraic analysis of UEN is inappropriate, the facts of Oppdal fall neatly into place once we assume that the mora is the relevant TBU in this dialect. In fact, this is the only difference that needs to be assumed between UEN and Oppdal. The H-plateau of accent 2 is accounted for directly, since H linked to both moras and L^* linked to the post-stress syllable is the best way to meet $*HD_{MAX}/L$. The initial H in marked polysyllabic accent 1 emerges because the lexical L^* is pre-linked only to the second mora, as in UEN. SPECIFY- T_{AP} requires the initial mora to be specified. Leftwards spreading of L^* would aggravate the violation of $*HD_{MAX}/L$ already incurred by the pre-linked L, while insertion of H comes for free, since there is no active constraint in the grammar that bans high tones from stressed syllables.

Finally, we are now ready to address the assumption that the boundary tone H% is linked to the rightmost TBU of the domain, and *not* with the boundary, as assumed in e.g. Gussenhoven (2004: 124). Since all TBUs within the accentual phrase have to be specified by SPECIFY- T_{AP} , the preceding L^* in the input would have to link to both moras if the final H% is only aligned with the right edge. This would make us expect either a level initial phase of the F_0 trajectory, or even a HL contour resulting from insertion of H on the first mora in order to minimize the violation of $*HD_{MAX}/L$. Neither is in accordance with the facts as they appear in Figure 7. A thorough analysis of this question must be left for later research, but the conclusion here is that in order to account satisfactorily for the Oppdal data, we must assume association of H% to the final mora of the accentual phrase. Since I know of no counterevidence with respect to the two other dialects discussed above, they have by implication been subjected to the same solution.

4.3. North Gudbrandsdal

The relationship between UEN and NGbr is not as straightforward as that between UEN and Oppdal. Since the tonal facts associated with the stressed syllable are the same, we must assume that the syllable is the TBU in NGbr as well.

Recall that NGbr differs from UEN on one count only: In inputs with an unstressed anacrustic syllable preceding the stressed one, there is a high tone on the unstressed syllable in NGbr that is absent from the corresponding UEN form. There is no obvious constraint in

the literature on tone that can account for such a difference. Since such a constraint will promote the presence of a high tone on an unstressed syllable, it cannot be grounded in the marked/unmarked patterning between metrical heads and tones that is expressed by constraints such as *HD/L (No low tones on metrical heads) and its converse *NON-HD/H (No high tones on metrical non-heads) (de Lacy 2002: 2).

The motivating property of such a constraint might be its context, which is an immediately following low tone on a STRESSED syllable. If low tones on stressed syllables are more marked than high tones, it may have to do with perceptibility. Inserting a high tone before the low tone in these cases will cause a more pronounced fall towards the low tone. This will clearly improve the salience of an L as a stress-enhancing feature. But in the absence of corroborating evidence from other languages, it would definitely have an ad-hoc flavour.

A simpler way to account for the NGbr facts might be to appeal to a generalized version of SPECIFY-T, which combined with the OCP will force the insertion of an H before the L* on the stressed syllable. (Recall that in UEN, SPECIFY-T was limited to accent phrases, in order to account for the assumption that anacrustic syllables are toneless.) But since there is no evidence that ALL unstressed syllables outside accent phrases are tonally specified in NGbr, this does not seem to be a less problematic solution.

5. A short note on West and Central Swedish

East Norwegian can be grouped with Central and West Swedish as a central Scandinavian type characterized in the typology of Gårding (1977) by two-peaked accent 2. West Swedish is regarded as very close to East Norwegian. In fact, Gårding and Stenberg (1990) claim that East Norwegian and West Swedish are identical except that the final H% in East Norwegian is considerably higher in pitch than in WS when it signals focus. This suggests that the analysis of UEN can be extended to West Swedish at least with respect to the tonal association pattern near the stressed syllable.

The grammar sketched for NGbr above may on the other hand be applicable to Stockholm as analyzed in Bruce (1977) and subsequent work referred to above. The competing analysis of Stockholm (Engstrand 1995, 1997) where the presence of the pre-stress H in accent 1 is rejected, should equally be compatible with the UEN grammar.

This possibility of generalizing the analyses proposed above to Swedish varieties must at this point be seen as a conjecture in need of further testing.

6. Concluding remarks

In this chapter I have argued that a more coherent analysis of East Norwegian as a group of minimally different tonal dialects can be accomplished if one adopts a variety of the hypothesis that the accentual contrast is based on different timing of a common UNDERLYING melody. The contrast between an unmarked accent 2 pattern and a marked accent 1 pattern in polysyllabic domains can be derived from the assumption that accent 1 arises as the marked member of the accentual pair due to lexical pre-linking.

This goes against the more commonly held assumption in the current literature that the contrast should be interpreted as due to different underlying melodies, where accent 2 emerges as the marked member due to it being more structurally complex. While two of the three East Norwegian dialects discussed in this chapter are not easily amenable to an analysis along these lines, the three dialects are shown to differ minimally within the analysis proposed here.

In addition, the data underlying the present analysis also pose problems for the view that the TBU in Scandinavian tonal accent systems is the stressed syllable only. The difference between NGbr and Oppdal, where the initial H of accent 1 links to the pre-stress syllable in the former, and to the initial part of the stressed syllable in the latter, suggests an analysis where both the mora as a constituent of the stressed syllable, and unstressed syllables, are required as tone bearers.

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Notes

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² The data reported in this section is a condensed recapitulation of Kristoffersen (2006a).

³ The superscripted numbers in the transcriptions mark accent and stress on the following syllable. The square bracket in the third example represents a clitic boundary between stem and definite marker.

⁴ The words represented are single instances of [¹stɔŋ.ŋɑ], *stonga* 'the rod' and [²skɑλ.λə], *skalle* 'skull' as spoken by a male speaker (born 1941) in the carrier sentence *Det var ___ presten sa* [It was ___ the vicar said].

⁵ The UEN contours represent the average over 2 realizations of the words [¹le:ʋŋ.nə], *levenet* 'the noise' and [²le:ʋŋ.nə], *levende* 'living' as spoken by a female speaker (born 1982) from Oslo in the carrier sentence *Jeg sa ___ nå* [I said ___ now]. The NGbr words are single instances of [¹fœŋ.ŋe], *fonna* 'the snow fen' and [²pœŋ.ŋɑ], *panna* 'the forehead' as spoken by a male speaker (born 1952) in the same carrier sentence as the one used in Oppdal, cf. preceding note.

⁶ Note one controversial point in the analysis. The boundary tone H% is assumed to link to the rightmost TBU of the domain, and *not* with the boundary, as assumed in e.g. Gussenhoven (2004: 124). The arguments for this will be given below under the Oppdal analysis in section 4.2.

⁷ A reviewer suggests that the initial H in accent 1 in NGbr may be floating instead of associated with the pre-stress syllable. Except for the fact that this H in the admittedly limited amount of data that I have had access to coincides with the pre-stress syllable peak, I know of no decisive evidence. As far as I can see, this question does not have serious consequences for the analysis either way.

⁸ Oppdal is in fact one of the dialects where we find monosyllabic accent 2 as well, the so-called circumflex accent. Due to space limitations, this can't be treated here, but work in progress shows that on the assumption that the monosyllables carrying the circumflex accent are trimoraic, an assumption for which there is independent evidence, the analysis sketched in this paper can account for the circumflex accent directly.

⁹ Due to differences with respect to data structure, it was not possible to extract instances of monosyllabic domains preceded by unaccented syllables from the UEN material. But since no evidence for an initial H in

accent 1 was found with respect to polysyllabic domains, the absence of such data cannot be seen as fatal. The contours represent single realizations of monosyllabic words spoken in utterance final position. The Oslo word is [ʊɑ̃], *voll* ‘mound’ as spoken by a female speaker born in 1982. The NGbr word is [ʂen], *skinn* ‘skin’ as spoken by a male speaker born in 1952 and the Oppdal word is [fã], *fall* ‘fall’ as spoken by a male speaker born in 1941.

¹⁰ The reason why the rise in the Oppdal example is less marked is a coincidence probably due to intonational factors in the example chosen. In general, the final H% is a feature of the Oppdal dialect as well.

¹¹ As pointed out by one of the reviewers, the notion of pre-linking an intonational tone may seem counter-intuitive, since intonation by implication is post-lexical. Even if mainstream OT rejects the level specific sub-grammars of Lexical Phonology, I admit that this poses a conceptual problem since pre-linking is not part of the grammar proper. One way of overcoming the problem would be to assume that the pre-linked L, although historically derived from intonation, is not part of the intonational tune in the synchronic grammar. When a form with an underlying L is subjected to the full, intonational tune in GEN, candidates with associated L* would be eliminated by the OCP in EVAL. This problem clearly needs more attention in future work.

¹² For further arguments against the claim that only stressed syllables are TBUs in Scandinavian tone, see Kristoffersen (2006b: 109f.)