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## IS 1 ALWAYS LESS THAN 2 IN NORWEGIAN TONAL ACCENTS?

### 1. Introduction

As in Swedish, a tonal accent distinction is found in most Norwegian dialects. The distinction is dependent on primary stress, so that any primary stress will be pronounced with one of the two melodies that manifest the accent distinction. I shall henceforth refer to such syllables as accented.

The phonetic manifestation of the melodies will vary with dialect, but two main groups can be identified. The East Norwegian type is found in the central and eastern part of Southern Norway. Here, accent 1 is characterized by a low tone relatively late in the stressed syllable, while accent 2 consists of a high tone early in the stressed syllable, falling to a low tone on the following syllable. The West Norwegian type, spoken in the western and southern part of Southern Norway, and in all dialects of Northern Norway where the accent distinction is present, is characterized by a high tone on the stressed syllable in accent 1, and a high tone on the following syllable in accent 2. In recent analyses of West Norwegian tone a low tone is posited as well on the stressed syllable in accent 2.<sup>1</sup> The evidence for this low tone will be the topic of the present chapter.

In section 2, I shall outline the standard analysis of East Norwegian, which is the variety that is best understood. In the following section I shall relate this analysis to recent analyses of West Norwegian, which suggest that a unified analysis of both varieties is possible, rendering one underlying, abstract system with different phonetic realization according to dialect group. In section 4 I shall present phonetic data from a recent investigation of West Norwegian dialects that seem to undermine this hypothesis. If these data are representative, the “one underlying system” hypothesis seems to be difficult to uphold.

### 2. The Standard Analysis of East Norwegian

As already suggested in the previous section, accent 1 in East Norwegian manifests itself as a low tone, henceforth L, aligned with the second mora of the accented syllable, while accent 2 consists of a sequence of a high tone followed by a low tone, henceforth HL, where the H is aligned with the first mora of the accented syllable, while the L coincides with a following unstressed syllable.<sup>2</sup> For this reason, accent 2 requires a minimal domain of two syllables. All monosyllabic words therefore have accent 1. In addition, the accentual domain is

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<sup>1</sup> See especially Abrahamsen (2003), Hognestad (1997) and Lorentz (1995).

<sup>2</sup> For a more detailed discussion of East Norwegian tone, see Kristoffersen (2000), chapters 9 and

characterized by a high tone at the right edge, that is, immediately preceding the next accented syllable, or the utterance end. The height of this boundary tone is used to signal focus.

Typical East Norwegian F0 contours are shown in Fig. 1. The left hand panel depicts the F0 trajectory of the accent 1 word [<sup>1</sup>mø:lə], *målet* ‘the target’ averaged across six recordings, and the right hand panel shows the corresponding F0 trajectory of the accent 2 word [<sup>2</sup>mɑ:lə], *male* ‘to paint’.<sup>3</sup> The bold parts of the contours represent vowels. Both words are pronounced with focus, as shown by the prominent raise at the end.

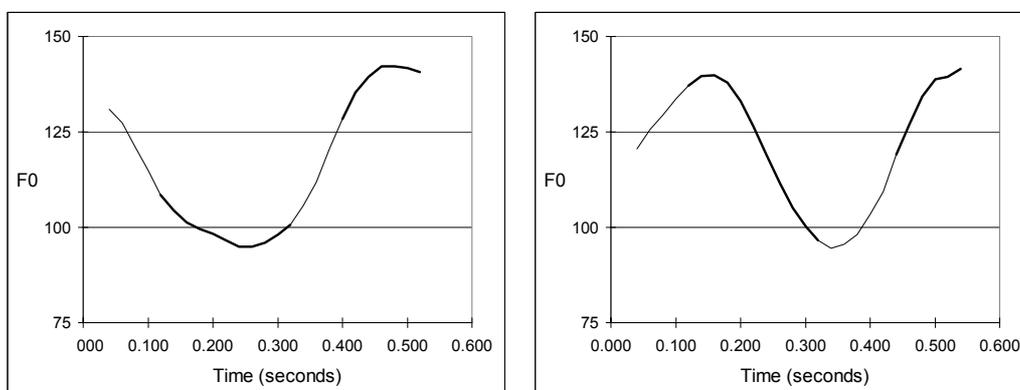


Fig. 1: East Norwegian realizations of accent 1 and accent 2 in CV:CV words, accent 1 to the left and accent 2 to the right

In focused phrases, the full tonal melodies can be interpreted as LH for accent 1, and HLH for accent 2. Thus, the contrast can phonologically be interpreted as a privative one, between presence vs. absence of the initial H in accent 2. The presence of this H causes the common LH part of the melodies to occur later in accent 2 than in accent 1.

Taking the phonological analysis one step further, the single tones that the two melodies are composed of, can be assigned different functions. The initial H of the accent 2 melody, whose presence vs. absence constitutes the lexical contrast, can be analyzed as a *Lexical tone*. The L that is common to both melodies can be seen as connected with the stress realization system, and therefore analyzed as a *Prominence tone*, while the final H is a boundary tone which when boosted signals focus, clearly has an intonational function.

### 3. A pan-dialectal analysis

<sup>3</sup> The raised numbers in the transcriptions signal accent type and stress. The panels are based on recordings of the author's speech.

The decomposition of the accentual melodies sketched above, has been adopted in several analyses of Norwegian and Swedish tonology that has appeared the last decade, see e.g. Lorentz (1995), Hognestad (1997), Abrahamsen (2003), Riad (2003), Bruce & Gussenhoven (1999), Kristoffersen (1990, 2000). Since the actual implementation in terms of H(igh) and L(ow) of the tonal melodies has been abstracted away from, this analysis can be made into a hypothesis with scope over all the tonal dialects of Swedish and Norwegian. Spelled out, the hypothesis predicts that the tonal contrast in all dialects is constituted by the presence or absence of a lexical tone. All words where this tone is present on the accented syllable will have accent 2. The common feature of both accents is the presence of a prominence tone, which appears on the accented syllable in accent 1 and on the post-stress syllable in accent 2. Finally, a boundary tone can be assumed at the right edge.

Within such a system, dialect variation would be limited to the actual implementation of these tones in terms of H and L, and different spreading patterns in longer domains, that is, domains where the accented syllable is followed by more syllables than are needed to furnish each tone with its own syllable. Here either the prominence tone or the final boundary tone could spread to the extra syllables, or the extra syllables could be left unspecified.

In what follows, I shall discuss the first part of this hypothesis, that is, whether all dialects can be characterized as having a lexical tone followed by a prominence tone in accent 2, while accent 1 consists of the prominence tone only. Possible differences in spreading patterns in longer domains will not be discussed. I shall not undertake a full survey, but concentrate on one West Norwegian dialect, viz. the Bergen dialect,<sup>4</sup> which in previous analyses, most notably Lorentz (1995), has been claimed to manifest such a system, but the mirror image of the East Norwegian system presented above with respect to tonal implementation.

#### 4. Problematic data from Bergen

As just mentioned, accent 2 in Bergen according to Lorentz (1995) consists of a low lexical tone on the accented syllable, followed by a high prominence tone on the post-stress syllable, while accent 1 consists of a high prominence tone only on the accented syllable. Both Hs are followed by a L on the following syllable, so that Accent 1 is characterized as a fall from the stressed syllable onto the post-stress syllable, while accent 2 is characterized by a fall from to the post-stress

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<sup>4</sup> Bergen is the second largest city of Norway, and is situated on the western coast of Southern Norway.

syllable onto the following syllable. In longer domains, the tone remains low until the end of the domain, in fact most often falling steadily due to declination.<sup>5</sup>

Fig. 2 below shows a pair of superimposed Bergen contours across a trisyllabic domain. Both follow an accent 1 domain, such that the contrasting accent 1 and accent 2 curves start at the crossbars.<sup>6</sup> Remember that according to the hypothesis presented above, the underlying melodies are supposed to be (HL)(HL) for the A1+A1 string, and (HL)(LHL) for the A1+A2 string.

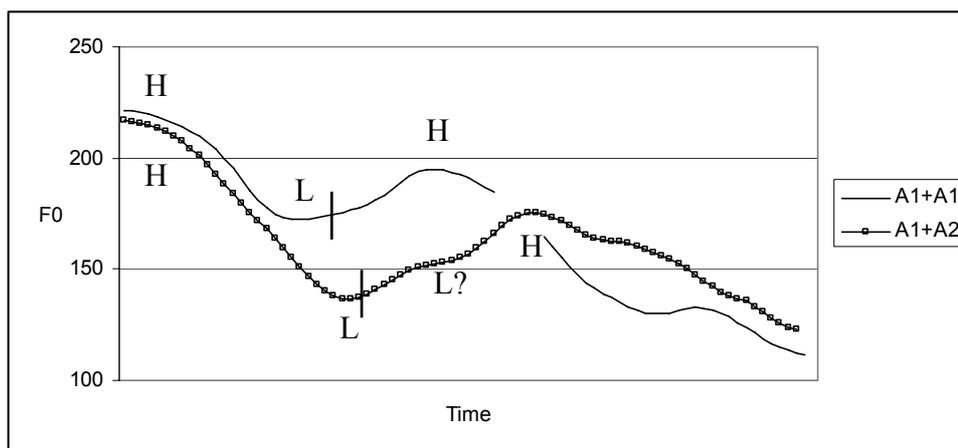


Fig. 2: Tonal accents in the Bergen dialect. A1 signifies accent 1, A2 accent 2.

While the pan-dialectal hypothesis is very appealing, due to its simplicity and scope, the contours shown in Fig. 2 do not support it. In both phrases, the F0 minimum between the two words coincides with the final vowel of the two Christian names. This strongly suggests that the names are pronounced with the expected HL melody, characterizing accent 1. In the phrase where the following family name is pronounced with accent 1 as well, we see a rise to another H on the initial, stressed syllable. This is also in accordance with the hypothesis.

<sup>5</sup> Other West Norwegian varieties have been assigned the same system by other authors, see e.g. Hognestad (1997) on Egersund, a southern West Norwegian variety, and Abrahamsen (2003), who analyzes a northern West Norwegian variety.

<sup>6</sup> The contours depict the two phrases (*S*)onja Langangen and (*M*)olly Rosenvinge, both female Christian names followed by a family name. Both names (*Sonja* and *Molly*) have accent 1. The family name *Langangen* ([<sup>2</sup>lɑŋ.ŋɑ.ŋŋ]) has accent 2, while *Rosenvinge* ([<sup>1</sup>ʁu:.sŋ.viŋ.ŋø]) has accent 1. The speaker is a male born in 1982, and is one of several speakers of different varieties of Norwegian that was recorded in 2000 as part of the project Norsk tonelagstypologi ‘Norwegian tonal accent typology’, henceforth *NTT*. The project was funded by the Norwegian Research Council from 2000 to 2003. The aim was to establish a typology of tonal systems in Norwegian. Implicit in this goal was of course testing the already existing analyses of Norwegian tone.

But when the first word is followed by an accent 2 word things become unclear. On the assumption that the accent 2 word begins with an L, we would have expected a low plateau, or even a fall, from the final syllable of the first word through the first syllable of the second. This is not what we find, however. Also here we find a quite even rise from the L at the end of the first word up to the F0 maximum that coincides with the second syllable of the accent 2 word. The latter is in accordance with the hypothesis that the H is linked to the post-stress syllable, but as just mentioned, there is no clear evidence that the initial, stressed syllable is phonologically associated with a separate low tone, as predicted by the pan-dialectal hypothesis.

These data rather suggest an alternative hypothesis where both accents consist of a HL melody, and the contrast between them is constituted by different timing. In accent 1 the H coincides with the stressed syllable, while in accent 2 it is rather associated with the post-stress syllable. The delay, however, cannot be attributed to the presence of a low tone on the stressed syllable, in parallel with the accent 2 initial high tone assumed for East Norwegian. Instead the delay must be encoded directly into the grammar in some way.

At least two possible counterarguments come to mind. First, the data depicted in Fig. 2 represent single instantiations of the two phrases, and the absence of any trace of a low tone on the initial syllable of the accent 2 words could be a coincidence. Second, there could be a constraint such as the Obligatory Contour Principle (OCP), banning the lexical L from manifesting itself in this environment.<sup>7</sup> In the next two sections these counterarguments will be discussed in more detail. In section 5 I present a quantitative analysis of three Bergen speakers that will modify the picture conveyed by Fig. 2, but which in no way can be mustered in direct support for the pan-dialectal model. In section 6 I shall present a quantitative analysis based on another environment, which more strongly supports the hypothesis deduced from Fig. 2.

## 5. Quantitative evidence for the presence of an L in a post-accent environment

The strongest possible evidence for a separate L on the first syllable of an accent 2 word following an accent 1 word, would be a fall, or more technically, a downstep from the final syllable of the initial accent to the initial syllable of the accent 2 word. Less persuasive would be a plateau from the final syllable of the first accent through the first syllable of the second, since that might also be interpreted as spreading from the uncontested L at the end of the first accent onto a tonally unspecified initial syllable of the following accent 2 word. Strongest evidence against the pan-dialectal hypothesis would be a confirmation of the

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<sup>7</sup> The OCP is a constraint that bans two identical, but independent tones from appearing on adjacent syllables (or to be more precise, adjacent tone bearing units), see e.g. Kenstowicz (1994: 322ff.).

situation depicted in Fig. 2, viz. an interpolation from the final L of the first word to the H on the post-stress syllable of the following accent 2 word.

In what follows, I present data culled from three speakers from the Bergen region, coded *Alav*, *Cahe* and *Anle* in the NTT-database.<sup>8</sup> Two phrases have been analyzed, both consisting of two words of more than two syllables in order to avoid unwanted effects of tonal crowding. The first, a sequence of A1 plus A2, is the name *Valdemar Langangen*, and the second, a sequence of A2 plus A2, is the name *Hannemor Langangen*. The data have been taken from the NTT-database, where each speaker produced the two phrases twice.

Figures 3 through 5 show the relationship between mean F0 of the HL of the two Christian names (*Valdemar* and *Hannemor*) and the first two tones L(?)H of the following family name (*Langangen*). The L(?) under discussion has been measured as the lowest F0 value of the initial vowel /a/ in *Langangen*. The data have been normalized from raw F0 values to fractions of the value of the final L of the A1 word.

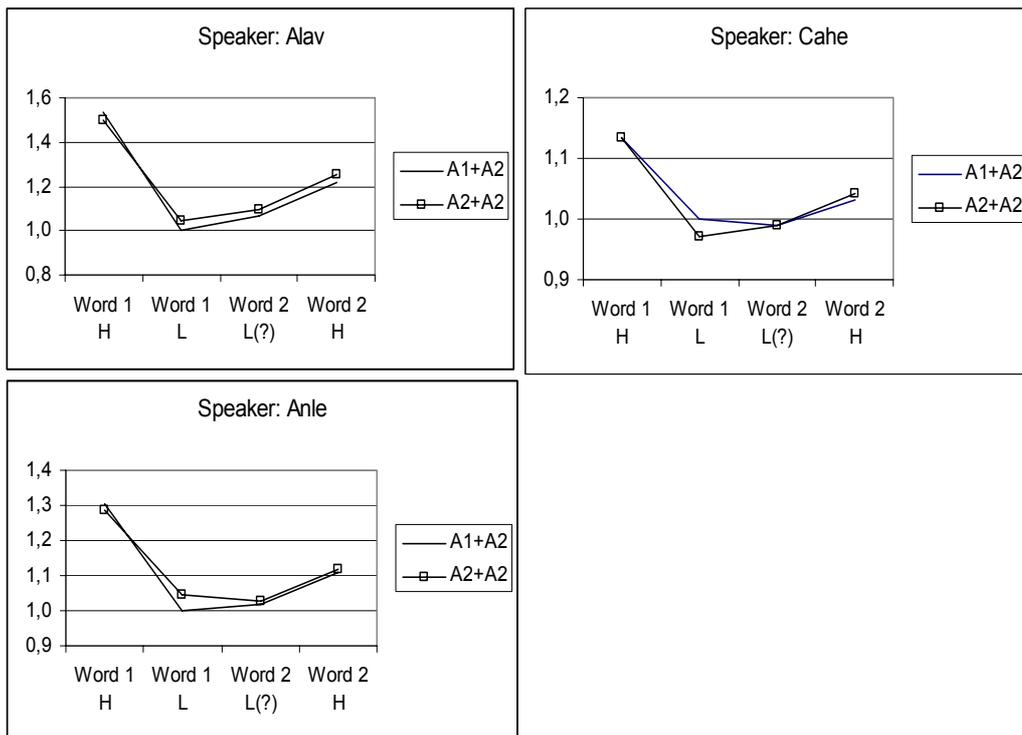


Fig. 3: Relationship between final L of preceding word and initial L? of accent 2 word

<sup>8</sup> All three speakers, one female and two male, were born between 1980 and 1983.

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Held together, these data suggest that the normal transition from any word final L to a following accent 2 word is a plateau. It is therefore the second of the three possibilities outlined above that seems to be closest to the actual state of affairs.

One could of course conclude that this result represents evidence in favor of there being an initial L present on the initial syllable of the accent 2 word, but this seems to me to be somewhat premature. Since the presence of an L at the end of both accentual melodies seems to be fairly uncontroversial, while the presence of the initial L of accent 2 is more questionable, the plateau could as mentioned above also be the result of spreading from the final L of the first word. We know from other dialects that the final L in West Norwegian spreads across all post H syllables in longer words, see Hognestad (1997) and Abrahamsen (2003), and it is therefore conceivable that it also may spread across a word boundary onto a tonally unspecified initial syllable in an accent 2 word. In other words, since an L is already present on the neighboring syllable, we are not allowed to conclude that the L on the first syllable of the accent 2 words is the realization of a separate phonological tone.

A better test would therefore be to look for evidence for an L when there is no accent preceding the accent 2 word. This will be the topic of the following section.

### 6. Quantitative evidence for the presence of an L when accent 2 follows an anacrusis

The best place to look for accent 2 realizations not preceded by another accent is at the beginning of utterances with one or more unaccented anacrusis consisting of e.g. a light subject pronoun followed by an unaccented verb. The NTT-database contains several utterances of this type, where the focal words have been inserted into carrier phrases such as ‘Her/his name is \_\_\_’, ‘They saw \_\_\_’, and ‘I said \_\_\_ now’. Unfortunately, and despite instructions and initial training, many speakers were not consistent here, and would occasionally accent the verb. But others were consistent, and among those were two of the three speakers already analyzed above, *Anle* and *Cahe*.

The force of the arguments that follow depends to a certain degree on the assumption that anacrusis are not only unaccented, but actually toneless. Since they describe, as we shall see shortly, a flat trajectory up to the beginning of the first accentual tone, this is not self-evident. If they were toneless, we would perhaps instead expect an interpolation from a presumably tonally neutral starting point to the first phonological tone of the first accented syllable. As this is not the case, the alternative interpretation would be that the flat trajectory is

the result of a low boundary tone at the left edge.<sup>9</sup> A third possibility would be to argue that the anacrusis are tonally neutral in a *positive* sense, that is, that their F0 values are determined by neither H nor L, but by a tone whose value is at the middle of the tonal range employed by the speaker at the beginning of an utterance. I know of no evidence that would help us decide between the two latter hypotheses. Note that if the first one were true, we would expect a continuation of the F0 level onto the first syllable of the accented word, since the latter would have a phonological L as well. This would mean that the same indeterminacy would arise here as with the post-accent examples analyzed above. The L on the initial syllable of an accent 2 word could stem from spreading of a boundary L associated with the anacrusis, or from a lexical tone that is part of the accentual melody. If the latter hypothesis were closer to truth, we would expect a fall to the first syllable of the accented word in case it is phonologically specified as L. A third possibility, viz. that the F0 actually rises from the last anacrusis to the H of the accent 2 word, would constitute evidence against an L as part of the accent 2 melody, irrespective of the question whether the anacrusis are actually L or not.

Fig. 4 shows the averages of measurements taken over 20 and 23 instances of the environment in question for the two speakers. Again the F0 values have been normalized, in this case to fractions of the mean value of the second anacrusis (of two).

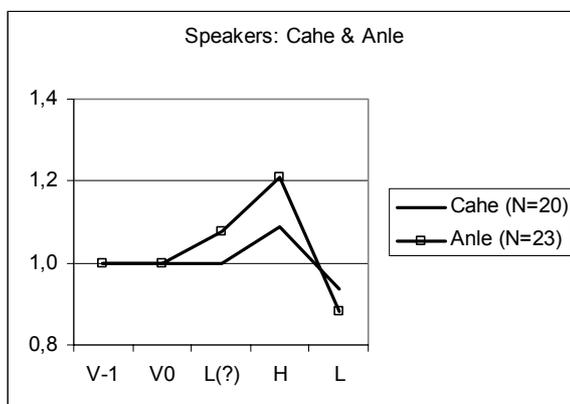


Fig. 4: F0 contours across two anacrusis followed by an accent 2 word

We see that the two speakers differ. While *Cahe* continues on the same F0 level onto the first syllable of the accented word, the F0 level of *Anle* seems to be the

<sup>9</sup> This is the interpretation opted for in Abrahamsen (2003). Note that assuming the tone to be H would not be possible, since that would make inexplicable the rise we always find to the initial syllable of any accent 1 phrase that may follow.

result of interpolation between the last anacrusis and the H of the accent 2 melody. In neither case do we find a fall.

For *Cahe*, we encounter the same indeterminacy that we found above with respect to the post-accent environment. The fact that the F0 level on the first syllable of the accented word is the same as that found on the preceding anacrusis, may be explained in at least three ways. First, it may be tonally neutral along with the anacruses. Second, it may be L due to spreading from the anacruses, and third, it may be L because there is an underlying L associated with that syllable, which merges with the L on the anacruses.

If we in some way could decide whether the anacruses are L or neutral, and they in fact proved to be neutral, the two latter possibilities could be eliminated. Unfortunately, I know of no decisive evidence at this point that could help solve this indeterminacy.<sup>10</sup>

*Anle* on the other hand, represents positive evidence for the absence of a phonological L on the first syllable of the accent 2 word. At least for this speaker, it seems safe to conclude that there is no initial L as part of the accent 2 melody, and that the accent contrast therefore consists of different timing of the same HL melody with respect to the stressed syllable.

## 7. Conclusion

In this chapter, I have argued that the presence of an initial lexical tone in accent 2 in West Norwegian dialects, in parallel with the lexical tone that seems present in East Norwegian dialects, may not be as uncontroversial as previous analyses have suggested. We have discussed data that instead suggest that the accentual difference in at least some West Norwegian varieties consist of different timing of an identical HL melody. Perhaps the strongest argument for the revised analysis proposed here, is that we do not seem to *need* the lexical L in order to account for the data.

The empirical basis of the analysis presented here is very limited, however, since it is based on only 3 (2) speakers of the Bergen variety. More work therefore needs to be done before the case can be considered to be settled.

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<sup>10</sup> Note that comparing the F0 level of the anacrusic syllables with those of later syllables that are uncontroversially low is not possible, since downdrift lead us to expect the latter syllables to have lower F0 values.

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