Tonal variation and change in Dalarna Swedish

Gjert Kristoffersen

University of Bergen

This article questions the prevalent account of North Germanic tonogenesis, which proposes that at the outset, Accent 2 was characterized by a two-peaked melody close to the one found in Central Swedish today (Riad 1998; Kingston 2011. The spreading patterns observed in the data analysed here is difficult to reconcile with this hypothesis. My analysis instead offers support in favour of the alternative hypothesis; that the phonetic roots of the accentual contrast are to be found in a difference in timing between single peaks, more specifically peak delay in plurisyllabic domains, but not in monosyllables due to lack of space. The variation that can be observed in the single peak Dalarna varieties today, from robust timing differences in the south to absence or only partial implementation of the tonal contrast in the north, strongly suggests that the accentual contrast has been spreading northwards through incremental peak delay in Accent 2 words. I argue that this mirrors the initial stages in the development that through additional peak delay eventually resulted in a two-peaked Accent 2 melody in Central Scandinavia, while the older single peak patterns are still retained in Dalarna and scattered around the geographical margins of Norway and Sweden.*

Keywords: North-Germanic, Swedish, Dalarna, Phonology, Tone, Tonal Accent, Tonogenesis, Dialect Splits, Diffusion

* My warmest thanks go to the speakers from East Mora, Malung, Skattungbyn, Sollerön, Vinäs, and Våmhus who generously let me record them in their homes. Gunnar Nyström put me into contact with them, and without his deep and extensive knowledge of the Dalarna dialects and his generous help and advice along the way, this article could not have been written. I also owe Eva Olander special thanks for helping me with the recordings in 2008, and Jan K. Hognestad for valuable comments on an earlier version. Finally, I thank the two anonymous reviewers for valuable comments which have greatly improved the article.

1. Introduction

Most dialects of Norwegian and Swedish are characterized by a binary tonal opposition, Accent 1 vs. Accent 2, often referred to as *tonal accent* in English. One of the unresolved questions concerning their diachrony is the nature of the original melodies from which the contrast developed about a thousand years ago. Since no direct evidence is available, these melodies must be reconstructed from the dialectal variation that can be observed today, combined with what can be regarded as plausible tonal figurations at the outset and subsequent plausible tonal changes, based on the uniformitarian principle (Labov 1972: 275).

Two competing views can be identified. The prevalent view since the turn of the century has been the hypothesis of Tomas Riad, see e.g. Riad (1998); (2000a; 2000b; 2003a; 2005; 2006; 2009), which assumes that the melodies that today characterize Central Swedish, including the capital Stockholm, are those most resembling what must have been the original phonetic contrast. For reasons that will become clear below, I shall refer to Riad's hypothesis as 'Type 2 first'. Opposed to this is the view that the melodies that characterize more geographically marginal regions such as Gotland and Skåne in Sweden, and different parts of West and North Norway, are the more archaic varieties (Bye 2004; 2011; Hognestad 2002; 2006; 2007; 2008; 2012; Iosad 2016; Kristoffersen 2004). This hypothesis will be referred to as 'Type 1 first'.

The tonal accent contrast is strictly associated with primary stress. The *phonological* contrast arose from what appears to have been a non-contrastive, complementary distribution of pitch accents in early mediaeval North Germanic, based on a distinction between monosyllabic and plurisyllabic words (Oftedal 1952: 55f.). This distribution became potentially surface contrastive due to two changes that took place during the mediaeval era, resolution of disharmonic rhymes through syllabification of sonorants and the development of suffixed, definite articles, see section 0 for further details.

With respect to the phonetic realization of the two accent melodies, two main types can be identified. Based on surveys published by Ernst A. Meyer (1937; 1954), these types were established by Eva Gårding and collaborators through several publications going back to the 1970s, see e.g. Gårding & Lindblad (1973), Gårding (1977) and Bruce & Gårding (1978). Figure 1 shows the F0 contours that characterize the two main types, both subdivided into two subtypes A and B. The vertical line in each small panel represents the division between the stressed syllable and a following unstressed or secondary stressed syllable.

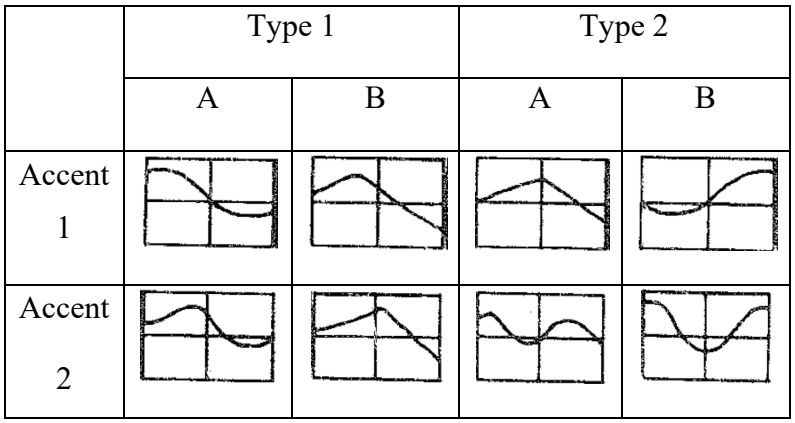


Figure 1: Phonetic realization types (adapted from Bruce & Gårding 1978)

The most important difference between the two main types is that Accent 2 has only one peak in Type 1, while it has two in Type 2. The difference between the two subtypes is one of timing, in that the (rightmost) peaks occur later in the B type than in the A type. Note that this difference in timing between Accent 1 and 2 also extends across the two main types, in that in the three first subtypes, the (rightmost) Accent 2 peak occurs later than the Accent 1 peak. In the fourth, type 2B, they coincide.

The bold lines in Figure 2 show where tonal accents are found in the Scandinavian countries. The main area covers most of Norway and Sweden, while Danish and the Swedish spoken in Finland with a few exceptions lack this feature.[1] The grey areas on the map show

[1] Most Danish varieties are instead characterized by the so-called *stød*, whose lexical distribution corresponds closely to Accent 1 in Norwegian and Swedish, and therefore must have the same historical origin. For a synchronic account of Danish stød, see e.g. Basbøll (2005: 82ff.).

the regions where the Type 1 dialects are spoken. As can be seen, all except one are found along the margins of the area. It is this exception, the area in grey in central Sweden that is the topic of this article. This area constitutes an island of Type 1 surrounded by Type 2 in all directions. Geographically, it is to a considerable extent coextensive with the Dalarna County. The south-eastern area forms part of the traditional mining region Bergslagen and is often referred to as Dala-Bergslagen. This is part of the fertile eastern central regions that also comprises the Uppland region and the capital Stockholm. The upper, north-western part, often referred to as Dalarna proper, consists of the two valleys formed by the eastern and western branches of the upper Dala river (Swedish *Dalälven*). These are more sparsely populated and dominated by small scale industry, agriculture, forests and lakes, with no major, urban conglomerations. The dialects in this region are counted as some of the most archaic in Scandinavia, especially those spoken around the northern shores and north of the Siljan lake in the East Valley. This area, which today comprises the municipalities Mora, Orsa and Älvdalen, is traditionally referred to as Ovansiljan, i.e. Upper Siljan in English. I shall continue to use the Swedish term.

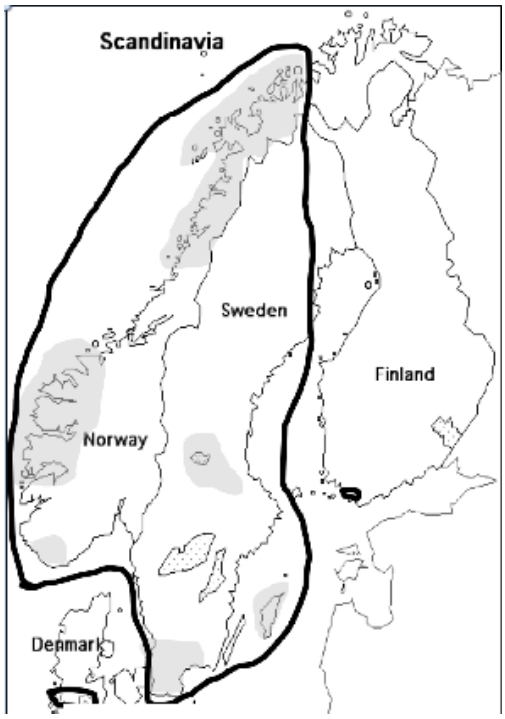


Figure 2: Geographical distribution of the phonetic realization types

The isogloss delimiting the northernmost Type 1 dialects from the Type 2 dialects to the north runs east - west just south of Älvdalen in the East Valley and the two northernmost local communities in the West Valley, Lima and Transtrand. While the border appears to be crisp in the West Valley, there are at least one instance of full absence and one of partial absence of the tonal accent contrast just south of the isogloss in the East Valley.

According to Tomas Riad's hypothesis concerning the development of the dialect variation depicted in Figure 1, Type 2A represents the best approximation to the original system, from which the other varieties have developed. The areas where Type 1 is found are in other word innovating areas according to this hypothesis. The central point of the present paper is that the Type 1 dialects that covers the Dalarna region, except the northernmost communities Älvdalen, Lima and Transtrand, are unlikely to have developed from a former Type 2 stage, as hypothesized by Riad (1998). On the contrary, I shall argue that when the available data are put together, a more plausible picture emerges where the southern, Dala-Bergslagen area earlier had a type 1A system while the northern part until fairly recently lacked the opposition. If this is correct, the accentual contrast has spread northwards as a Type 1 innovation, where the northern dialects in the East Valley are in the process of adopting Type 1A, while the southern dialects have gradually changed into Type 1B.

Although one of course cannot know this for sure, I assume that the tonal accent contrast didn't arise simultaneously in all the dialects that have the contrast today. Rather it must have developed in a more limited area and spread by diffusion until it at some point came to characterize almost all dialects of Sweden and Norway.

Finally, areas with no tonal contrast are few and far between. In addition to the northernmost dialects of both countries, where contact with toneless Finno-Ugric Sámi and Finnish may be the cause of the absence, one accent-less region in Uppland in Sweden is known from the literature (Riad 2003b), and two in Norway, a small area in Helgeland on the border between North Norwegian Type 1 and East Norwegian Type 2 (Fintoft et al. 1978),

and the rural dialects surrounding the town of Bergen in West Norway (Jensen 1963; Kristoffersen 2016; Rundhovde 1964: 40 f.). To this list the present article adds the village of Våmhus, on the border between Type 2 in Älvdalen to the north and Type 1 to the south.

The rest of the article is organized as follows: In section 0 I briefly introduce the dialects spoken in the Ovansiljan area. Section 0 is a review of the Dalarna part of Ernst A. Meyer's survey of accent realization in different parts of Sweden in the first decades of the 20th Century (Meyer 1937; 1954), and section 0 is a review of the current hypotheses regarding the origin of the tonal accent contrast. In section 0 I introduce the data and methods of analysis. Section 0, which constitutes the main body of the paper, presents the results, starting in the lower parts of Dalarna, south of Ovansiljan, and then going north towards the Type 1/Type2 isogloss between the Mora/Orsa and the Älvdalen municipalities. A discussion of the results follows in section 0, and section 0 concludes.

2. The Ovansiljan dialects

Figure 3 is a map of Ovansiljan which shows the locations referred to in the text.

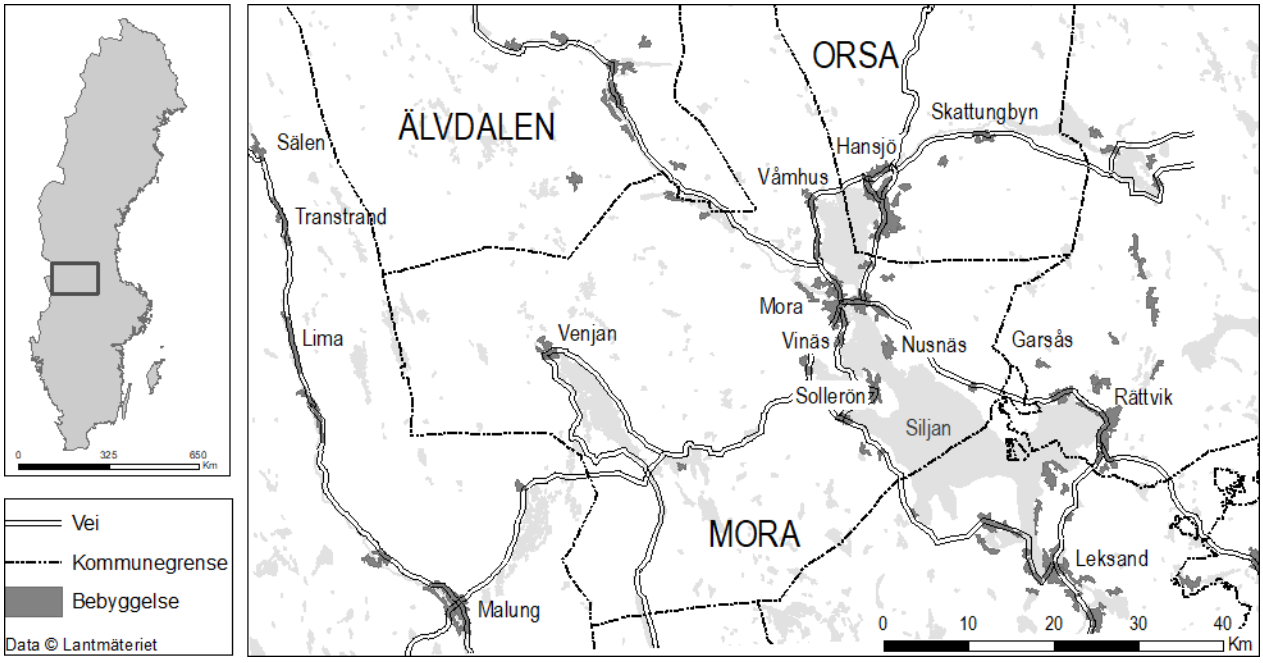


Figure 3: Map of Ovansiljan (Map by Kari Elida Eriksen, University of Bergen)

As mentioned above, the dialects spoken in the northern part of the East Valley stand out as some of the most archaic dialects in Sweden. They are in general not understood by speakers from other parts of Sweden, so all dialect speakers are bidialectal between Standard Swedish and the local dialect.

The northernmost Älvdalen variety, by far the best known, now and then attracts popular international attention as "the language of the Vikings".[2] [3] But the dialects spoken in the two municipalities south east of Älvdalen, Mora and Orsa, are not very different. The most important difference is perhaps sociolinguistic. Älvdalen has a very strong language preservation movement, supported by linguists from many parts of Scandinavia and the rest of the world. The corresponding forces in Mora and Orsa are much weaker and does not enjoy the same national and international attention, neither from linguists nor from non-linguists. Due to this, the varieties spoken south of Älvdalen must be considered moribund, as very few young people today are reported to use the dialect. Instead they use the regional variety of Standard Swedish.[4]

3. Tonal background

3.1. Ernst A. Meyer's data from the early 20th Century

Ernst A. Meyer (1873-1953) can be seen as one of the pioneers within instrumental phonetic fieldwork. By means of an instrument he constructed himself and referred to as "Tonhöhenmesser" (Meyer 1937: 23ff.), he made a series of recordings of speakers of different Swedish dialects, among them a considerable number in Dalarna.[5] The recordings were made around the First World War. The speakers were all males, most of them born

[2] See e.g. *The Guardian* 24 May 2015 (https://www.theguardian.com/world/2015/may/24/sofia-hellqvist-prince-carl-philip-sweden-glamour-model-lost-viking-language) and the site *Mother Nature Network* 6 October 2016 (http://www.mnn.com/lifestyle/arts-culture/blogs/forest-language-age-vikings-may-soon-disappear), both accessed on November 2, 2016. If in the future these pages can no longer be visited, the links cited here should speak for themselves.
[3] In English, the Älvdalen variety is often referred to as Elfdalian. In this article, I shall use the Swedish term *Älvdalen*.
[4] For an introduction to the Älvdalen variety in English, see Sapir (2005). As far as I know, no corresponding introductions to the Mora and Orsa varieties exist.
[5] 27 speakers from different part of Dalarna are represented in the table at the end of Meyer (1937).

during the final decades of the 19th Century. For each speaker, a selection of F0 contours of the test words are reproduced in the book. Meyer then drew stylized, "typical" contours of the two accents based on the individual F0 tracings. These were collected into a big, foldout table at the end of the 1937 monograph, and updated in his (1954) part II. The F0 contours in Figure 1 and Figure 4 are reproduced from the 1937 table.

Meyer himself identified the two main dialect types, and referred to them as *Bergslagen* and *Svea* intonation, which correspond to Type 1 and 2 respectively (1937: 231f.).[6] The terms themselves, along with the A and B subtypes were as mentioned above introduced by Eva Gårding and her colleagues in the 1970s. With respect to Type 1 they are clearly based on the subdivision Meyer did of his Bergslagen type.

Figure 4 shows the distribution of the accent types across Sweden, based on Meyer's contours as well as other sources.[7] The Dalarna County has been delimited with a thick, grey line. Each symbol represents a dialect, which in some cases represent more than one speaker. Stars mark Type 1B dialects and vertical bars dialects belonging to Type 1A. Among the Type 1 symbols, the B-type dominates, but there are three instances of the A-type, two of them north of the B-symbols and one further south among them.[8] The two v-symbols to the northwest represent the Type 2A Älvdalen dialect in the East Valley and the Transtrand dialect in the West Valley.

An important question is to what extent Meyer's data are reliable. There can be little doubt that in general, his individual F0 tracings, interspersed within the main text in the 1937 book, can be depended on. But even if the main difference between the accents emerges clearly when one compares the individual tracings representing each accent, there is variation within

[6] Svea refers to the East Central region of Sweden, which includes Stockholm. Type 2A is today often referred to as the Svea type, or Central Swedish.
[7] The terms "Grave" and "Acute" refers to Accent 2 and Accent 1 respectively.
[8] There is also something that looks like a neutralization symbol among the stars. The source for this is unclear. There is no example of a neutralizing dialect in Dalarna among the graphs given in Meyer (1937; 1954), and it is not commented upon in the publications where the map has been reproduced. Since it does not coincide with the location of Våmhus, where I shall show that there is no contrast, and Våmhus is not identified as a dialect without the contrast in the text, it is most probably an error, and it will be disregarded in what follows.

each category in addition to a considerable amount of micro-prosodic noise. One might think that this would make it difficult to determine the exact shape of the "typical" contour for each speaker/dialect. However, Meyer is not explicit about how he arrived at these representations, beyond saying that they are typical for each speaker.[9]

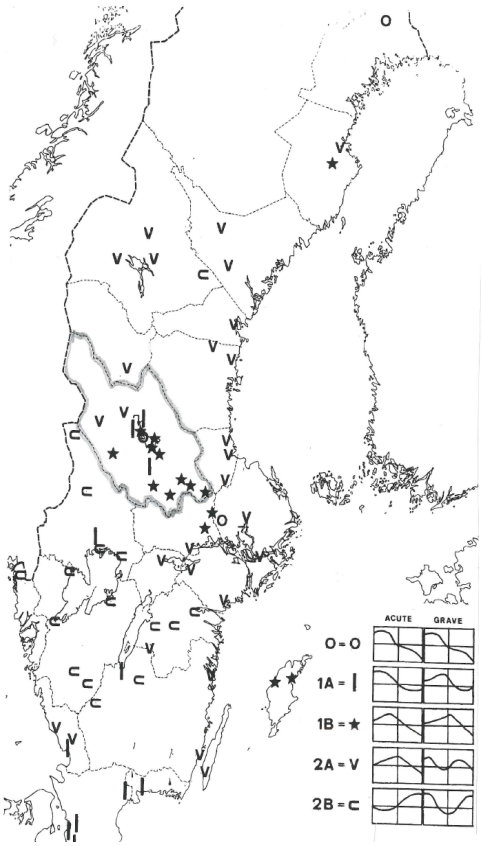


Figure 4: Geographical distribution of accent types in Sweden, from Gårding & Lindblad (1973: 48). Grey line delimiting Dalarna added by the author.

Since the timing differences between F0 peaks discussed in this article are small, the question arises whether the categorization into A- and B-types based on Meyer's idealized contours can be trusted, both with respect to exact timing and to differences between the dialects. In this regard, it is interesting that in Dalarna the two subtypes do not appear at random with

[9] "…, sind in der am Schluss dieser Arbeit beigefügten Tafel die Intonationsformen zusammengestellt, wie sie sich als dem Gesamtmaterial für jeden Sprecher als typisch ergeben" (Meyer 1937: 231). ("In the table at the end of this work the intonation contours are compiled, such as they appears from the total amount of data collected from each speaker").

respect to geographical distribution. Instead, two out of the three instances of the A-type are located in what must be the upper East Valley close to the Type 2 isogloss, while the area to the south with one exception is dominated by the B-type.[10] Meyer himself is clear about this relationship:

> Within this area the intonation does not manifest itself in the same form. In fact, a continuous development in the tonal shape of the Accent 1 and Accent 2 words can be identified with a remarkable constancy from the south-east towards the north-west.[11]

Another problem with Meyer's data is that there are two versions of many of his contour pairs, those published in the table at the end of his 1937 book, and those in the corresponding table at the end of the 1954 book. The 1954 book appeared posthumously and contains text chapters on North and East Swedish, but no further discussion of his Dalarna findings. According to the foreword by the editor, Birger Calleman, the table at the end of the book is based on "… a table found among Dr. Meyer's papers [...] with the title: Averaged intonation contours of the different Swedish speakers" (p. 13).[12]

One example of such lack of correspondence is Malung in the West Valley. In the 1937 table, one speaker is included. The contours show an early Accent 1 peak, and the Accent 2 peak just after the syllable boundary. Of the two individual example contours shown on p. 215, both of the infinitive *låna*, 'to borrow', the first has the peak at the syllable boundary, the other late in the intervocalic consonant; that is, after the syllable boundary. In the 1954 table, two speakers are included. According to the list of speakers at the end of the table, the first one of these, no. 41, is identical with the only Malung speaker represented in the 1937 book. In the 1954 table, his Accent 2 peak is placed *at* the syllable boundary, not after as in 1937. A similar relationship holds for the dialects of Rättvik and Leksand, south in the East Valley.

[10] Comparison of the contours in the final table of Meyer (1937) with the vertical bar's location on the map points to this exception being Floda, in the lower part of the West Valley. Inspection of the individual contours of the Floda speaker on p. 219 shows that some of the accent 2 peaks fall before the syllable boundary, while others have the peak after it. The idealized contour has the accent 2 peak just before the boundary.
[11] "Innerhalb dieses ganzes Gebiets zeigt die Intonation nun aber nicht die gleiche Form, vielmehr gibt sich eine im Ganzen mit bemerkenswerter Stetigkeit von Südosten nach Nordwesten fortschreitende Entwicklung in der tonische Formung der Akut- wie der Graviswörter zu erkennen." (Meyer 1937: 236, my translation)
[12] "… einer unter Dr. Meyers Papieren gefundenen Aufstellung […], mit der Überschrift: Durchsnittsintonationskurven für die verschiedenen schwedischen Sprecher" (My translation).

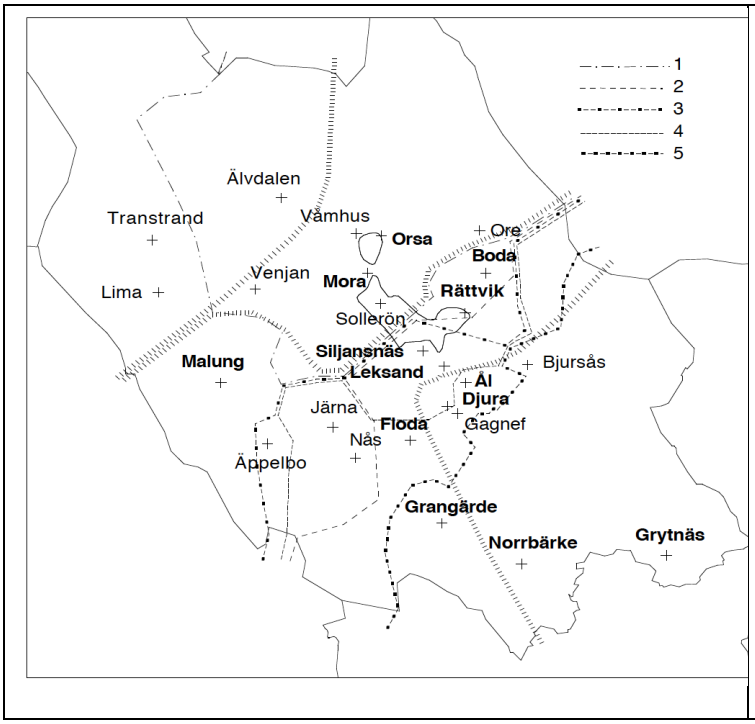
Also here, the Accent 2 peaks are placed earlier in the 1954 table than in the 1937. Since these discrepancies are not commented upon in the 1954 book, it is hard to say why and how Meyer revised his contours. But given the 1954 editor's information cited above, there can be little doubt that the revisions are Meyer's own, and the most plausible explanation is perhaps that the revisions were based on data not yet analysed in 1937. I shall therefore base the analyses that follow on his revised, 1954 contours.

3.2. Engstrand & Nyström's reanalysis of Meyer's data

Engstrand & Nyström (2002) breaks Meyer's gradual relationship down to the level of the individual dialect. Based on digitized versions of Meyer's contours from Dalarna, they measured the distance of the Accent 1 and 2 peaks from the syllable boundary. Given the lack of a timescale in Meyer's representations, the distance was measured in "arbitrary units". The right panel in Figure 5 shows the results for the different dialects. In cases where more than one speaker represented a given dialect, the positions of the peaks were averaged.

The analysis of Engstrand & Nyström, based on the Accent 2 values in the 1954 table, strongly corroborates Meyer's observation cited above that there exists a gradual development in timing relative to the syllable boundary.[13] Or in their own words: "In summary, grave tone-peaks tend to appear later the further south by southeast that we move across the one-peaked dialects on the map".[14] Based on this, they make the same conjecture as the present article is based upon; that the pattern is due to a spreading process from the southeast towards the north and the northwest that manifests itself as an increasing degree of later timing of the Accent 2 peak.

[13] However, as they note themselves, the correlation is not as clear if accent 1 is used as baseline.
[14] Recall that "Grave" refers to Accent 2, and "Acute" to Accent 1.



Dialect	Peak time (arbitrary units)	
	Grave	Acute
Mora	-21	-49
Orsa	-19	-71
Floda	-13	-56
Boda	-11	-52
Malung	-6	-32
Rättvik	-2	-44
Leksand	-1	-38
Siljansnäs	-1	-28
Grangärde	3	-68
Ål	15	-49
Djura	22	-35
Grytnäs	22	-18
Norrbärke	26	-36

Figure 5: Relative timing of accent peaks in Meyer's idealized accent contours (right panel) with map references (left panel) in boldface. (Adapted from Engstrand & Nyström (2002)

4. The origin of the tonal melodies and the subsequent dialect splits

4.1. The tonogenesis hypotheses

While there is no a priori reason to assume that the mechanisms that originally caused the tonal split were the same forces that subsequently drove the dialect splits described in section 0, a comprehensive theory that can account for both by invoking the same phonetic driving forces can be seen as more ambitious and potentially of greater explanatory power than one where the two are seen as separate and independent processes. In this section I shall argue that the Type 1 first hypothesis is comprehensive in the way just mentioned. This will not settle the issue as to which one of the hypotheses are correct, but as mentioned above, the data presented in this article in my opinion support the Type1 first hypothesis as a comprehensive theory covering the tonogenesis as well as the dialect splits. In order to contextualize the findings presented in section 0 below, it is therefore necessary to shortly present the two theories.

Let us first look at the Type 2 first hypothesis. As already mentioned, Tomas Riad in a series of papers (Riad 1998; 2000a; 2000b; 2003a; 2005; 2006; 2009) has argued that the realization pattern closest to the original melodies is that of Type 2A, with an early and a late peak in focused Accent 2 phrases, and a single peak in Accent 1, see Figure 1 above.[15] The basic assumption is that the second peak in Accent 2 is the reflex of a tonal marking of Proto-Nordic secondary stress following the primary stress on the (mostly) initial root syllable of a word. Drastic syncopation processes during the pre-Old-Scandinavian stage resulted in all short, unstressed syllables being deleted (Haugen 1976: 150f.). This again resulted in stress clashes and elimination of secondary stresses immediately following a primary stressed syllable. But crucially, the original high tone according to Riad must have survived on these destressed syllables; resulting in a double-peaked H*LH contour on plurisyllabic words and a single H*L on monosyllabic words. If this hypothesis is correct, the Type 1 varieties, including the Dala-Bergslagen ones, must have developed from Type 2A.

The Type 1 first hypothesis reconstructs the tonogenesis as a difference in timing in Old Norse of an intonational H*L pitch accent between monosyllabic words on the one hand and plurisyllabic words with at least one syllable following the main stress syllable on the other. In the latter class, the H* was subjected to incremental peak delay, a change which was blocked in monosyllabic words due to lack of space.

Peak delay is a well-known synchronic and seemingly physiologically based process whereby tonal peaks are often realized later than its phonological affiliation would lead us to expect (Gussenhoven 2004: 72, 90; Xu 1999; Yip 2002: 8-10). During the Old Norse period, this can have developed into a perceptionally robust pattern of complementary distribution, which became potentially contrastive with the advent of the two changes briefly mentioned in section 0.

[15] The hypothesis is referred to also in later, major works, such as Riad (2014: 235); (2018), as far as I can see without major modifications. It also seems to have established itself as the commonly accepted view, see e.g. Kingston (2011).

The first was resolution of disharmonic rhymes in monosyllabic words through schwa epenthesis or sonorant syllabification. The relevant rhymes had a sonorant following an obstruent, as in Old Norse *vápn*, 'weapon', which in modern Norwegian is pronounced [^{1}ʊoː.pən] or [^{1}ʊoː.pn̩], depending on dialect, and in Standard Swedish [^{1}ʊɑː.pən].[16] The second was the well-known North-Germanic development of suffixed definite articles via cliticization of a formerly morphologically independent determiner. Both these changes resulted in new types of disyllabic words that crucially *retained* their original, monosyllabic accent (Haugen 1976: 283f.). By this, both (formerly monosyllabic only) Accent 1 and plurisyllabic Accent 2 could occur in plurisyllabic words and may form minimal pairs.

One of the reviewers asks how these "new" disyllabic words could be exempted from the peak delay rule, since the language on this view must have had an obligatory rule inducing delayed realization of the H* in plurisyllabic words. Given its status as obligatory, one would expect that also newly introduced plurisyllabic words would be subject to the rule. Here, however, one must take into consideration that probably neither of the two changes were immediately easy to perceive as introducing new environments for the peak delay rule. The sonorant syllabification or insertion of a svarabhakti vowel in words like [^{1}ʊoː.pn̩]/[^{1}ʊoː.pən] from Old Norse monosyllabic *vápn*, most probably was a gradual and variable phonetic process where the status of a given realization of a word as mono- or disyllabic often may have been difficult to determine. As long as this indeterminacy persisted, it is likely that this word type was treated as underlyingly monosyllabic and not subject to the rule.[17]

Given the fact that the suffixed definite articles developed from morphologically independent determiners, it is highly likely that they went through a stage as clitics on their way to suffix status. While most inflectional and derivational suffixes today trigger Accent 2

[16] Main stress and tonal accent are marked by a superscripted '1' for accent 1 and '2' for accent 2 before the stressed syllable.

[17] Indeed, a number of synchronic analyses of the modern varieties assume this word type to be underlyingly monosyllabic and subject to epenthesis, see e.g. Lahiri et al. (2005a), Riad (2014: 276f.), Kristoffersen (2000: 58) and Wetterlin (2010: 63). The main argument here is that the excrescent syllable disappears as soon as a vowel-initial suffix is added, as in singular [^{1}ɑk.sl̩] 'shoulder' vs. plural [^{2}ɑk.sler], 'shoulders'.

when added to monosyllabic stems, clitics never do. A case in point based on Norwegian examples is the difference between the preterite of the verb *kaste*, 'to throw', /[2]kast-a/ with Accent 2, vs. the imperative of the same verb, *kast* combined with the East Norwegian clitic /-a/ 'her', which gives /[1]kast-a/ 'throw her', with Accent 1.

Definite articles which have no segmental traces of a plural marker still behave as clitics in this way.[18] These include all singular forms irrespective of gender and the plural neuter /-a/, common in most Norwegian dialects, due to the absence of an overt plural suffix in neuters in Old Norse. The important point here is that this change in status from clitic to suffix does not leave other overt traces in the surface forms that might lead speakers to reinterpret these forms and change the accent from 1 into 2.

Summarizing, I contend that this hypothesis of how the accentual contrast arose, has at least an equal claim to plausibility as Riad's hypothesis. First, it is based on a common phonetic mechanism, peak delay, which like other phonetic factors causing language change may be active for specific periods of time in a given language. Second, the changes that terminated the complementary distribution between mono- and plurisyllabic words are both of a nature that can explain why their results were not immediately treated as plurisyllabic, lexical words and therefore subject to the rule assigning later timing of the H*, i.e. Accent 2.

4.2. The dialect splits

I now turn to the later changes that led to the dialect variation that can be observed today. As with the tonogenesis itself, direct evidence of how accent realization has changed over time is scarce. Recordings only go back to the first half of the 20th Century. Consequently, only

[18] Lahiri et al. (2005a); (2005b) argue that the definite articles irrespective of number are indeed still clitics, and that this explains their deviant behaviour with respect to accent assignment. This analysis is feasible if the plural and definite markers are set up as underlyingly separate, as in e.g. /hest-er$_{plur}$-ne$_{def}$/, 'the horses' in East Norwegian, and fused by synchronic rules. The surface form is [[2]hɛs.tn̩.nə]. A rule of r-deletion would therefore be needed. This would have to be specific to this very environment and worse, bleed the retroflex rule that in other environments obligatorily fuses /rn/-sequences into [ɳ]. But as one of the reviewers remind me, the relationship is more transparent in other dialects, such as Standard Swedish, so here a clitic analysis would be easier to defend.

changes from that time to the present can be charted with a reasonable degree of validity through comparison of older and more recent recordings from a given area.

As far as I know, only two cases of internal change across generations have been published. Both are from West Norwegian dialects. The first is a change in a Type 1 dialect. Based on two data sets separated by two generations, Hognestad (2008); (2012: 262ff.) shows how the south-western small town Flekkefjord dialect has changed from Type 1A into 1B. This means that the Accent 2 peak from being realized late in the stressed rhyme in the speech of the older generation has migrated into the post-stress syllable in the younger generation. At the same time, the Accent 1 peak has also undergone delay, but confined within the stressed syllable. It is difficult to say whether this is a change driven by internal factors in the dialect or the result of influence from Type 1B dialects spoken not far from Flekkefjord, but Hognestad notes that this change brings the dialect more in line with other south-western Type 1 dialects.

In Hognestad (2006); (2012: Part II and III; p. 256ff.) an even more striking change is described, this time of the Accent 1 realization, in the Type 2 dialect of Stavanger. Recordings made in the 1920s (Selmer 1927) show that the peak at that time occurred in the beginning of the stressed syllable. In the 1960s, contours published in Fintoft (1970) show that the Accent 1 peak had moved to the final part of the stressed syllable. Recordings made by Hognestad himself of speakers born in the 1980s show that the peak by this time had migrated into the post-stress syllable. During the same period of time, the Accent 2 melody has been left unchanged.

To the best of my knowledge, these are the only examples of comparisons of different generation that have been published, in addition to those presented in this article. They both show the same: diachronic change of tonal accent realization is characterized by a gradual delay of H* tonal peaks with respect to the syllabic-segmental string. These changes are

strongly reminiscent of the process that I have argued most likely was the initial step towards the establishment of the accentual contrast, peak delay.

4.3. Implications for the present study

One of the places where the two hypotheses will have different stories with respect to diachronic roots, is the lower part of the Dala-Bergslagen, which according to the Meyer (1937); (1954) tables is a Type 1B dialect. The Type 2 first hypothesis will have to derive it from an earlier Type 2 system. The Type 1 first hypothesis on the other hand implies that the Dala-Bergslagen Type 1B has developed from an earlier and close to the original 1A pattern by a process that is exactly the same as one from Flekkefjord described by Hognestad (2008); (2012: 262ff.), viz. migration of the Accent 2 H* across the boundary between the stressed and the post-stress syllable.

I propose in other words that at some point in time Type 1A characterized the lower part of Dalarna. I further conjecture that the upper East Valley, Ovansiljan, at that time had no tonal contrast. From the lower part the accent contrast has spread north, first introduced in each dialect as a minimal peak delay in Accent 2 words, modelled on the neighbouring source dialect.[19]

Once the contrast was acquired, continued peak delay in Accent 2 words over subsequent generations then increased the difference in timing between the two accent peaks. This hypothesis implies that the further up the valleys one goes, the smaller the timing difference between the two peaks will be. It also implies that there may still be dialects to which the contrast has not yet diffused, that is, dialects with no contrast where all primary stressed syllables are realized with an early accentual peak.

[19] How the rather complex distribution of the two melodies has been acquired is an important question. As pointed out by one of the reviewers, the lexical distribution of the two accents appears to be much too complex to be acquired without simplification by diffusion through dialect contact. At this point, I have no answer to this, so the question must be left for future research. But one fact that might be taken into consideration here is that the speakers will have heard spoken Standard Swedish all their lives, through mass media as well as in school. Whether this can be transformed into an active and correct competence later in life, is of course an open question that deserves further investigation. The speakers are also bi-dialectal, so another interesting question is whether their variety of Standard Swedish is tonal.

When the accentual contrast spreads northwards, it is in other words introduced as a Type 1A system with a minimal distance between the peaks. Further peak delay will gradually turn Type 1A into Type 1B dialects. Both Meyer's survey and the Engstrand & Nyström's analysis discussed in section 0 above support such a scenario.

5. Data and methods of analysis

The data consist of recordings of mainly older dialect speakers from the Upper East and West Dalarna region. Table 1 is a list of the speakers. The recordings were made during three field trips to the area. The first took place in 1990, where recordings were made in Älvdalen, in Sollerön and East Mora.[20] In 2008 I recorded speakers from Vinäs and Våmhus in Mora and Skattungbyn in Orsa. The final field trip took me to Malung, Lima and Transtrand, the three northernmost communities in the West Valley. Of these, only the Malung recordings will be explored in this article. In all the localities, initial contact was made with one speaker whom I had been referred to as a steady dialect speaker. This person then recruited the others.[21]

All the recordings included reading of a set of randomized carrier sentences with target words representing different types of Accent 1 and Accent 2 words, varying by vowel quantity, segmental material (voiced vs. unvoiced consonants following the accented vowel) sentence position (final vs. non- final) and word length. The structure of the carrier sentence ensured that all the target words were read as focused. Only disyllabic words with intervocalic voiced consonants, mostly sonorants, are used as data in this article. Especially in the earliest recordings, the number of data points for each speaker and each accent is unfortunately lower than they ideally should have been. There is, however, a large degree of consistency across speakers from each location, which to a certain extent make up for the sparseness of data in these cases.

[20] Recall that Figure 3 is a map showing the location of the different villages.
[21] The recordings are available, for research purposes only, at http://hdl.handle.net/11509/138.

Municipality	*Area*	*Village*	*Speaker code*	*Year of birth*	*Gender*	*Recorded year*
Mora	East Mora	Nusnäs	EastMora90_02	1925	F	1990
			EastMora90_03	1966	F	1990
		Garsås	EastMora90_01	1928	M	1990
	West Mora: Sollerön	Kulåra	Sollerön90_02	1909	M	1990
			Sollerön90_01	1935	F	1990
			Sollerön90_03	1949	F	1990
	West Mora: Mainland	Vinäs	Vinäs08_01	1917	M	2008
			Vinäs08_02	1931	F	2008
			Vinäs08_03	1943	M	2008
	North Mora	Våmhus	Våmhus08_02	1931	F	2008
			Våmhus08_03	1934	M	2008
			Våmhus08_01	1942	M	2008
Orsa	East Orsa	Skattungbyn	Skattungbyn08_02	1924	F	2008
			Skattungbyn08_03	1935	F	2008
			Skattungbyn08_04	1935	F	2008
			Skattungbyn08_01	1938	M	2008
Malung		Malungsfors	Malung14_03	1927	F	2014
		Malung	Malung14_01	1945	F	2014
		Öje	Malung14_02	1944	M	2014

Table 1: The speakers

All the words in the data-sets were annotated in Praat as intervals labelled *VCV*, with the left edge inserted at the beginning of the stressed vowel and the right edge 75 ms. into the post-stress vowel. Figure 6 shows an example, the word *koma*, 'to come', as spoken by one of the Sollerön speakers.

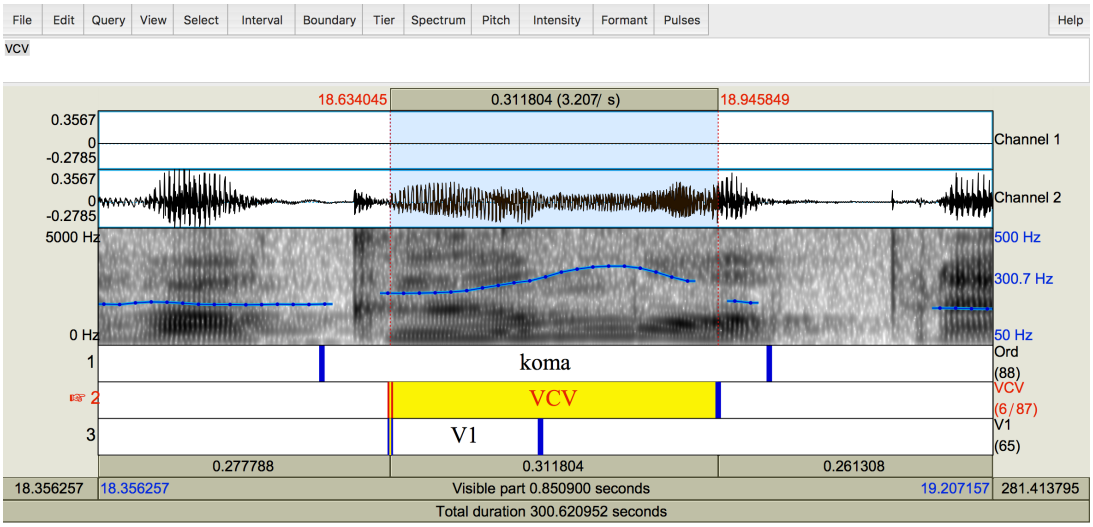


Figure 6: Interval annotation in Praat

The VCV interval is annotated on the second tier. On the bottom tier, the stressed vowel rhyme is annotated as V1. After annotation of each file was completed, numerical data was extracted from the files by means of the Praat script *Pitch Dynamics*, which for each VCV interval among other values returns duration of the interval and the position of the maximal F0 value as a percentage of the duration.[22] This is in other words a measure of the timing of the accentual peak, which then can be related to segmental landmarks such as the end of the stressed syllable rhyme (= the syllable boundary) and the beginning of the unstressed vowel (the V_CV boundary). The reason for only including a fixed part of the unstressed vowel in the interval is that the duration of this vowel may vary considerably. If the whole vowel duration had been included, the position of the peak as a measure of relative timing with respect to the stressed syllable would have been compromised.

For a number of measuring points that must be set in the script, it also returns F0 values. By means of these, normalized individual F0 contours for each word can be generated, and from these averaged contours for each accent type. The left panel of Figure 7 shows the average Accent 1 and 2 contours and the distribution of peaks for one of the Vinäs speakers.

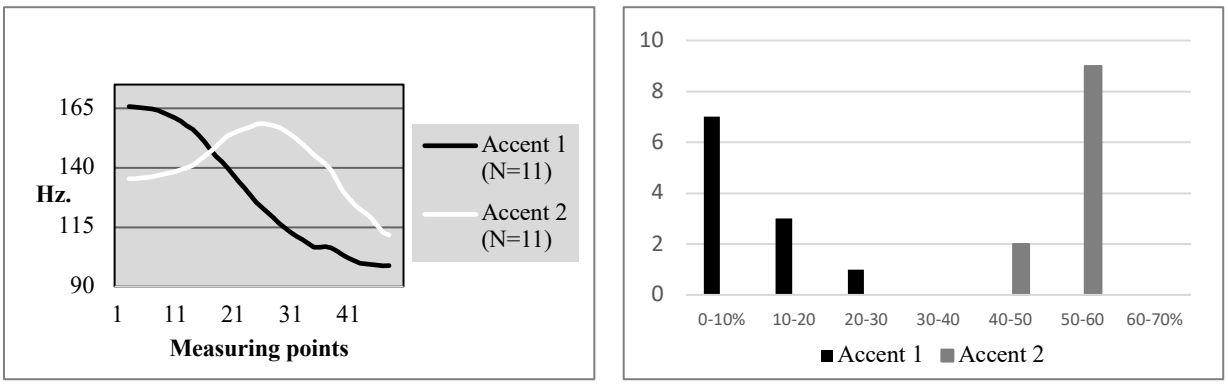


Figure 7: Mean contours for Accent 1 and 2 for male Vinäs speaker born in 1943 generated by means of Pitch Dynamics across 50 measuring points (lift panel), and distribution of peaks (right panel)

[22] Pitch Dynamics is written by Christian DiCanio, and can be downloaded from http://www.acsu.buffalo.edu/~cdicanio/scripts.html (last accessed June 1, 2016)

The most important measure for the topic of this article is the percentage representing the position of the accentual peak within the interval. As can be seen from Figure 7, the early, initial peak of the Accent 1 will be reflected in a low average percentage, while the later peak of the Accent 2 contour will be reflected in a higher value. The average positions of the Accent 1 and Accent 2 peaks for this example are 10.2 and 51.8% respectively (standard deviations = 4.7 and 2.8%, $p < 0.001$ by a simple t-test). As can be seen from the distribution shown in the right panel, in this very clear case, there is no overlap at all between the Accent 1 and Accent 2 scores.

In order to provide measures that are maximally comparable to Meyer's data, the position of peak positions will be measured relative to the syllable boundary. This is a measure that is easy to extract from words with long vowels, such as /²stiː.na/ *Stina* (proper name), since the boundary here coincides with the right edge of the vowel. In words with short vowel plus geminate consonant, such as /²tjin.nä/ *kinna* 'to churn', the syllable boundary falls somewhere within the intervocalic geminate, without any clear acoustic feature marking its precise location. In order to include this type in the data set, a way to infer the approximate location of the boundary in a non-arbitrary and transparent way is needed. One possible procedure would be to extrapolate from the duration of the long vowel rhymes and assume that the CVV and the CVC rhymes would have the same average duration as measured in percent of the total VCV duration. A better procedure, which allows us to analyse each CVC token separately, is to assume that the syllable boundary is located near the midpoint of the geminate in each token. This is the procedure chosen here.

6. Results

As mentioned above, Meyer (1937: 236) pointed out that the timing of the Accent 2 peak in his recordings from Dalarna correlated with geography in the sense that the further north a dialect was spoken, the earlier the peak. Or from the perspective of this paper: the further north, the smaller the timing difference between the Accent 1 and Accent 2 peaks. This

picture was later confirmed by Engstrand and Nyström (2002) in their reanalysis of Meyer's data, as reported in section 0 above.

In this section we shall look at and analyze newer data, in order to (1) see to what extent this correlation still holds and (2) whether the timing of the Accent 2 peak has changed, as hypothesized in section 0 above. In order to be able to categorize the different speakers into Type A and B, speakers, I shall count speakers whose mean Accent 2 peak is timed before the syllable boundary as Type A, and speakers with their peak timed after the boundary as Type B.

The picture that will emerge, can summarized as follows: In the more southern and south-western areas, around the southern shore of Lake Siljan and in Malung in the West Valley, the Accent 2 peak has been considerably delayed, into a clear B-type, since Meyer did his recordings. Further north, around the northern shore of Lake Siljan, Type 1B is still the norm. Here nine out of the ten speakers examined have their mean Accent 2 peak before the syllable boundary. In the northernmost area, along the Type 2 isogloss, there is one dialect where the tonal contrast has only been partially implemented, and one where it is absent. There is in other words a clear pattern identical to the one Meyer found two to three generations earlier, with the important addition that the northernmost part of the East Valley, the tonal contrast has not yet been fully implemented.

6.1. Transition from Type 1A to B in the south and west

Fransson and Strangert (2005) is an investigation of speakers from the local communities of Rättvik and Leksand, near the southern shore of Lake Siljan. Their goal was to compare their results with those of Meyer, as digitized and measured by Engstrand & Nyström. The speakers were between 20 and 50 years of age, five from Leksand and six from Rättvik. They pronounced two words forming a minimal pair with respect to the tonal accent distinction; each member of the pair was read at least five times in the same carrier sentence.

In Engstrand & Nyström's digitization of Meyer's 1954 contours, the Accent 2 peaks in both communities roughly coincided with the syllable boundary, which can then be classified as an incipient Type B. The speakers recorded by Fransson & Strangert realized their Accent 2 peak well after the boundary, with a mean of 59 ms. for the Leksand speakers and 67 ms. for those from Rättvik. Fransson & Strangert interpret this in the following way:

> Thus, in the light of the varying grave accent peak locations as demonstrated by Engstrand & Nyström (2002), the southern type of accent realization (represented by Djura, Ål and Grangärde) would have progressed further to the north and north-west. (p. 82)

The "southern type of accent realization" refers to dialects spoken further south, where the Accent 2 peak was realized later in Meyer's material. It should be noted that Fransson & Strangert also checked their results against the individual contours for the two communities published in Meyer (1937). While the differences here appeared as smaller, this does not change their conclusion. Stated within the analytical framework of the present paper, it can surely be concluded that the two dialects have changed from incipient Type B into two clear Type B varieties through Accent 2 peak delay.

The same development, but perhaps even more dramatic, can be observed in the northernmost Type 1 dialect in the West Valley, Malung. In 2014, I recorded three speakers, one male born in 1944 and two females born in 1945 and 1927 respectively. The 1945 speaker (Malung14_01) was recorded twice, reading the same set of sentences both times. Since most of Meyer's speakers were born late in the 19th Century, there are about two generations between the two speaker groups.

The material was a set of scripted sentences where target words were read in pre-focal, focal and post-focal position. The focal type is the one that are closest to the material used by Meyer and Fransson & Strangert, so I shall concentrate on this subset of the material here. The Accent 2 part of this subset consisted of three disyllabic words with initial stress and sonorant, intervocalic consonant, each read six times by each speaker.

According to the table in Figure 5 above, which shows the results of Engstrand & Nyström's digitization and analysis of Meyer's contours, both the Accent 1 and the Accent 2 peaks occurred before the syllable boundary in the Malung contours, by –32 and –6 arbitrary units. These numbers are based on the two Malung speakers represented in Meyer's 1954 table.

Table 2 shows the position of the Accent 2 peak relative to the syllable boundary for the three speakers compared with the two Malung speakers represented in Meyer (1954). The measurements given for the latter two are approximations arrived at by dividing the bottom line of each of Meyer's panels into 20 identical parts, and then magnifying each panel such that each part became equivalent of 5 mm. Based on this scale, the peak positions was calculated by hand. For the three speakers recorded in 2014, the peak position was calculated as explained in section 0. The syllable boundary is set at 100%, such that values below this indicate peak positions before the boundary and thus within the stressed syllable. Values above indicate peak positions in the post-stress syllable.[23]

Speaker	Year of birth	Gender	Recorded	Mean Accent 1	Mean Accent 2
KJJ (Meyer)	1903	M	1920	66.7%	100.0%
GJ (Meyer)	?	M	?	70.5%	88.2%
Malung14_03	1927	F	2014	46.1% (N=6)	164.7% (N=8)
Malung14_02	1944	M	2014	69.3% (N=12)	145.3% (N=12)
Malung14_01	1945	F	2014	59.2% (N=24)	156.7% (N=24)

Table 2: Malung: Accent peak positions relative to the V.CV syllable boundary

While the two older speakers according to Meyer have their Accent 2 peaks before and at the syllable boundary, the three younger speakers recorded in 2014 all have Accent 2 values far above 100%. For Accent 1, there is no clear differences between the two age groups.

To the extent that Meyer's two speakers were representative of their age group, these and the results of Fransson & Strangert strongly suggest that progressive Accent 2 peak delay is

[23] The reason why the number of data points vary between speakers, here and in later tables, is that for some speakers, some readings had to be discarded as unanalysable, mostly due to octave jumps or creaky voice.

an active and ongoing change in the lower part of the two valleys today, and that Malung, Rättvik and Leksand in the course of about two generations have changed from Type 1A into Type 1B.

6.2. The Type 1A dialects around the northern shore of Lake Siljan

In this section, we shall look at the timing of the Accent 2 peak in recordings of speakers from three parts of the Mora municipality south of Mora town, Sollerön, Vinäs and East Mora. Engstrand & Nyström's measurements of Meyer's contours show that the speakers from the Mora and Orsa municipalities have the earliest realization of the Accent 2 peak of all the Dalarna speakers.

As can be seen from Figure 3, Sollerön is a big island off the north-eastern shore of Lake Siljan. The three Sollerön speakers analysed below all come from the village of Kulåra at the south-western part of the island. The village of Vinäs is on the mainland north-east of Sollerön. I shall refer to these dialects as belonging to the 'Sollerön type' and to the area as 'West Mora'. The East Mora villages are situated along the north-eastern shore of Lake Siljan, opposite of Sollerön. Two of the speakers recorded came from the village of Nusnäs and the third from Garsås, some kilometres further south.

Before going into the timing patterns in these dialects, we need to take a closer look at another change that have interacted with the tonal accent development. The quantity shift is a change whereby all former light, stressed syllables in North Germanic are lengthened into bimoraic heavy syllables, see e.g. Riad (1995) and Kristoffersen (1994; 2008; 2011). In other words, an original CV.CV structure was lengthened into a CVV.CV or a CVC.CV structure, depending on dialect. An example is Old Norse /ko.ma/ 'to come', which in the Sollerön type dialects is realized as [^{2}kʉ:.mɔ]. The shift is completed in almost all dialects spoken in Sweden and Norway today, but a few relict areas remain. One is the northernmost part of the East Valley, where all of Älvdalen and at least the villages of Våmhus in Mora and Skattungbyn in Orsa have not yet undergone the change. Here the pronunciation of 'to come'

is [²kʉ.mɔ]. Importantly, all disyllabic words where the lengthening has taken place have Accent 2.

In the dialects discussed in this section, the shift has had some unusual effects. As shown in Kristoffersen (2010) it resulted in three distinctive and significantly different accent patterns in the Sollerön type, with an early peak in Accent 1, a later peak in Accent 2 words with original heavy stressed syllable, and an even later peak in the lexical set that underwent the shift. I shall refer to the two latter types as Accent 2a and Accent 2b respectively.

A plausible explanation of this development, in line with the analyses offered in Kristoffersen (2008); (2010), is that when the accentual contrast was introduced into the dialect, the quantity shift had not yet taken place. If we conjecture that the Accent 2 peak delay as measured in ms. was about the same irrespective of the quantity of the stressed syllable, it would have been timed later in the 2b words with respect to the syllable boundary due to the short vowel and short intervocalic consonant. The Sollerön contours in the final foldout table in Meyer (1937) clearly confirms this. In words with etymologically heavy root syllable, the Accent 2 peak occurs before the syllable boundary. In words with etymologically short vowel, it occurs after the boundary. When the quantity shift hit the dialect, this different synchronisation with the syllabic string was maintained; resulting in the present timing differences between the 2a and the 2b sets.[24]

Across the lake, in East Mora, I assume that the same timing difference of the Accent 2 peak in words with light and heavy stressed syllable existed, with the accentual peak in the former falling somewhere in the then post-stress syllable. This then seems to have triggered the very common tendency to associate high tone with stress, so that prior to the quantity shift, the word stress in these words were shifted to the final syllable.[25] Interesting and rare as

[24] See Iosad (2016) for another example of how changes in segmental quantity do not lead to tonal resynchronization.

[25] This type of stress shift in old CV.CV words has been documented in only one dialect in addition to East Mora, viz. in Upper East Telemark in Southern Norway. According to Skulerud (1922: 264ff.) the pattern here was variable, both initial and final stress were possible along with the so-called level stress pattern (Kristoffersen 2007b; 2008).

this development may be, the stress shift has made the set of former CV.CV words peripheral as data for the story told in this paper, and they will not be considered further.

When Lars Levander wrote his two-volume survey of the Dalarna dialects (Levander 1925; 1928), the quantity shift seems to have been in the process of being implemented both in East Mora and in Sollerön. In the examples of East Mora 2b forms given in (1925: 56), most but not all final vowels are transcribed as long, while those followed by a consonant are still short. In the inflectional tables in (1928: 169–253), however, every one of the numerous examples from East Mora with final stress are transcribed with short vowel, irrespective of the presence of a final consonant or not. In the recordings that I made in 1990, all final, stressed vowels were long.

Also for Sollerön forms, Levander (1928: 169–253) transcribes words belonging to the 2b class consistently with a short root vowel in the inflectional tables. But this may also here be a result of etymologically biased principles of transcription. Elsewhere (1925: 66f.) he writes that the vowels are in the process of being changed into "half long" and even long while at the same time the old pattern is still alive.[26] Meyer confirms this. In his description of his Sollerön speakers he notes that these vowels have been lengthened, but without showing full length in line with etymological long vowels (Meyer 1937: 160; 65).[27]

This suggests that the short vowels of the 2b type was in the process of lengthening during the first two decades of the 20th Century, when Meyer made his recordings of young men born shortly before the turn of the century. In the recordings I made in 1990 and 2008 these vowels are all long, even in speakers born as early as 1909 and 1917. In the light of the remarks made by Levander and Meyer referred to above, lengthening must in other words have taken place quite recently.

[26] Etymologically based transcriptions do not seem to be uncommon. In the still not completed dialect dictionary of Upper Dalarna (Levander & Björklund 1961 –) all the old CV.CV words are transcribed with short vowel irrespective of dialect.

[27] The average duration of the three measures of etymologically long vowels reported on p. 160 is 261 ms., while that of the three 2b vowels is 197,7. Unfortunately, Meyer does not report the duration of short vowels preceding consonant geminates or consonant groups.

Meyer recorded two speakers from South Mora, LP from Sollerön, born in 1888, and AÖ from Isunda, a village on the mainland between Sollerön and Vinäs, born in 1898. Their scores, based on Meyer's 1954 contours, have been calculated as described in **Feil! Fant ikke referansekilden.** above.

Results are shown in Table 3, where the speakers are ranked by location and then by age. Looking first at the Accent 2a scores, almost all the speakers are characterized by a clear Type 1A system, with the Accent 1 scores falling in the first half of the stressed syllable (< 50%), and the Accent 2a scores in the second half (> 50%). The only exception is the oldest of Meyer's speakers, whose Accent 2a score is also below 50%.

The South Mora speakers are in other words different from the Leksand, Rättvik and Malung speakers analysed above, whose systems clearly belongs to the 1B type. When it comes to the Sollerön 2b type, however, the peak is realized considerably later that in the 2a type, with four out of six speakers having the peak in the post-stress syllable. These dialects can therefore be characterized as a mixed type, with Accent 2 realizations split between 1A and 1B conditioned by the quantity shift.

Speaker	Location	Gender	Year of birth	Mean Accent 1	Mean Accent 2a	Mean Accent 2b
LP (Meyer)	Sollerön	M	1888	25%	40%	113%
AÖ (Meyer)	Isunda	M	1898	36%	68%	96%
Sollerön90_02	Sollerön	M	1909	17.6% (N=17)	62.7% (N=10)	92.3% (N=12)
Sollerön90_01	Sollerön	F	1935	18.5% (N=17)	68.2% (N=10)	114.9% (N=15)
Sollerön90_03	Sollerön	F	1949	30.0% (N=15)	86.4% (N=7)	114.1% (N=15)
Vinäs08_01	Vinäs	M	1917	35.1% (N=8)	63.8% (N=10)	96.7% (N=6)
Vinäs08_02	Vinäs	F	1931	30.4% (N=11)	75.7% (N=9)	116.5% (N=10)
Vinäs08_03	Vinäs	M	1943	25.5% (N=11)	106.2% (N=12)	148.5% (N=9)
EastMora90_02	East Mora	F	1925	23.3% (N=20)	93.6% (N=18)	n.a.
EastMora90_01	East Mora	M	1928	20.9% (N=15)	80.6% (N=18)	n.a.
EastMora90_03	East Mora	F	1966	19.4% (N=20)	90.3% (N=13)	n.a.

Table 3: Accent peak positions relative to the syllable boundary in in the East Mora, Sollerön and Vinäs recordings.

Another interesting feature, although limited to the Sollerön type, is that there among the speakers recorded in 2008 appears to be a correlation between age and degree of peak delay

for both Accent 2a and 2b: the younger the speaker, the more delay. The only exception is the tie with respect to Accent 2b between the two youngest speakers from Sollerön. Even if the number of speakers is too low for drawing conclusions, it is tempting to interpret these differences as a reflection of the Accent 2 peak delay gradually progressing through the age groups in these dialects.

However, this age-scaling is not reproduced in the East Mora scores. Here, all three speakers show fairly advanced peak delay, approaching the syllable boundary. The outlier from our perspective is the much younger third speaker, 03. Given the age difference, one would in the light of the results from the other locations have expected a much later Accent 2 peak realization here, that is, a 1B type. A fact that should be taken into consideration here is that she did not acquire the dialect primarily in the village. Both her parents were from East Mora. Before the speaker was born, they moved to Falun, a medium-sized town further south-east in Dala-Bergslagen and south of the two valleys. The East Mora dialect was used at home, so that the speaker grew up as bilingual with the dialect used at home and a regional standard Swedish in e.g. school. During holidays, which were spent in the village, she used the dialect with others, not only her parents. At 24, when she was recorded, she appeared as a very conscious dialect speaker, aware of its endangered state, and she may consciously or unconsciously have modelled her speech on her grandmother, speaker 02.

6.3 The northernmost dialects: partial and full absence of the contrast

I now move to the northernmost part of the Type 1 area. This consists of the part of the Mora municipality north of Mora town and the Orsa municipality to the north-east of Mora. To the north-west, Mora borders on the Älvdalen municipality, where the dialect as noted above is characterized by double-peaked Type 2 Accent 2.

The earliest descriptions claimed that there was no accent distinction in Orsa and Mora. This was the conclusion of Rydqvist (1868: 218), whom some years later was referred to and accepted by Axel Kock (1878-1885: 53). Also Adolf Noreen in his earliest study of the

Dalarna dialects concluded that there was no accent contrast in the northernmost areas south of Älvdalen (Noreen 1881: 9). Some years later, however, he expressed doubt about this conclusion (1907: 472).[28] The first to show that there was indeed an accent contrast in Orsa, was Johannes Boëthius in his (1918) analysis of the sound system of the dialect. He refers to discussion with and assistance from Meyer, and his description of the realization of the contrast accords well with the contours later published by Meyer.

Meyer did not record any speakers from North Mora, but three speakers from Orsa. They came from three different villages Sundbäck, Vångsgärde and Skattungbyn, and were born in 1903, 1872 and 1899. Sundbäck and Vångsgärde are located close to each other in the south-western part of the municipality, not far from the border with Mora and Mora town. Skattungbyn is located at the other side of the municipality, near the north-eastern border, as shown in Figure 3. Meyer's contours all show the same pattern, early Accent 1 peak, and the Accent 2 peak before, but close to the syllable boundary, that is, Type 1A as expected.

In more recent recordings from Orsa no further peak delays compared with Meyer's contours can be found. Olander (2002) analyses three speakers, who when recorded around the turn of the century were 68, 68 and 34 years old. The two first were in other words born around 1930, while the final one was born in the mid 1960s. Olander does not mention from what part of the municipality the speakers came from. She does not give a full quantitative analysis of the speakers, but the examples given clearly show that the Accent 2 peaks occur well before the syllable boundary. Olander notes herself that the timing of the peaks is not noticeably different from that shown in Meyer's contours.

I recorded speakers from two locations in this area, Skattungbyn and Våmhus. The village Skattungbyn is near the north-eastern border of Orsa, far from the main valley and the more densely populated areas around Lake Siljan and Lake Orsa. The speaker recorded by Meyer

[28] Axel Kock (1851-1935) and Adolf Noreen (1854-1925) were professors of Nordic languages at the universities of Lund and Uppsala. They were both leading figures in the emerging field of dialect studies in Scandinavia in the late 19th Century.

was born 1899. In his description of this speaker, Meyer noted that the contour of Accent 2 words with long vowel was very similar to the Accent 1 contour in that both were characterized by early peaks. In words with short vowel, both in CV.CV and CVC.CV structures, the peaks occurred later (1937: 180f.). Meyer all the same claimed that there was a small timing difference between Accent 1 words and Accent 2 words with long vowel. In addition, he claimed that the Accent 2 contours show a less peaked form than the Accent 1 contours.

The four speakers that I recorded in 2008 were born in 1924, 1935, 1935 and 1938. The youngest was male, the three others female. In these recordings, the unusual realization of Accent 2 with long vowel found by Meyer, is confirmed. As can be seen from Figure 8, the contours representing Accent 1 words and Accent 2 words with long vowel are identical. There are no traces of the lower Accent 2 peak of Meyer's speaker.

This state of affairs, with the accent contrast governed by quantity type is to the best of my knowledge unique among the tonal dialects of Norway and Sweden. It is, however, found in another geographically peripheral tonal dialect, on the island of Langeland in Denmark, to the south of the regions characterized by stød. According to Kroman (1947: 76ff.) Accent 1 characterizes polysyllabic words with etymologically long root vowel, while Accent 2, with several segmental exceptions, characterizes words with etymologically short vowel, including those in former CV.CV structures which have later been lengthened.[29]

[29] Thanks to Miguel Vazquez-Larruscain for pointing out Kroman's work to me.

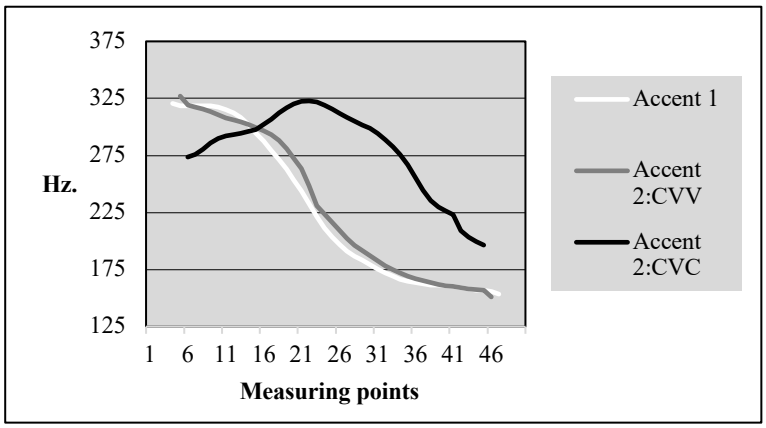


Figure 8: Skattungbyn: Tonal accent contrast, averaged contours for speaker Skattungbyn_02. The grey line represents words with long vowel that have Accent 2 in other dialects.

In the data on which the contours shown in Figure 8 are based, there is a potential error source that must be cleared away. The long vowel 'Accent 2' contour is based on several readings of the same word, the proper female name *Stina*. There are quite a few examples that the accent type associated with proper names may vary by geography. For instance, the names *Anna* and *Sara* have Accent 2 in most West Norwegian dialects, while they have Accent 1 in eastern dialects. So even if *Stina* has Accent 2 in most Swedish dialects, it may exceptionally have Accent 1 in Skattungbyn. This is not the case, however. Decisive evidence is provided by an analysis of accent realization in the conversation between the four speakers that I recorded after the readings were finished. Figure 9 shows the results across the three female speakers. As can be seen, the results are exactly the same as those ensuing from the analysis of the reading material. I therefore conclude that Accent 2 is limited to words with short root vowel in Skattungbyn.[30]

[30] As a non-speaker of the dialect, my understanding of the conversations is somewhat limited. Therefore, not all relevant words have been annotated in the Praat TextGrid file; only those that I was sure that I recognized and understood. As can be seen from the N-values in Figure 9, this still rendered a substantial number of data points.

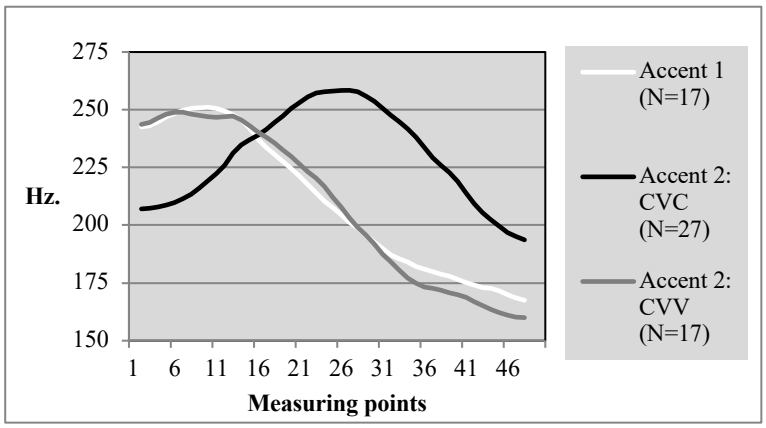


Figure 9: Skattungbyn: Tonal accent contrast across the three female speakers, as realized in conversation. The grey line represents words with long vowel that have Accent 2 in other dialects.

The more detailed timing data for all the four Skattungbyn speakers are shown in Table 4. There seems to be no age-related differences here. But while two of the speakers, 02 and 03 appear to have no contrast between Accent 1 and Accent 2: CVV, the two others show intermediate values between Accent 1 and Accent 2: CVC, but still much closer to Accent 1. This *may* be interpreted as an early emergence of the contrast also in this environment, in line with the neighbouring dialects to the south. Even if the averages are based on few tokens, it is all the same suggestive that t-tests for the two speakers with different Accent 1 and Accent 2:CVV averages, 04 and 01, approach significance ($p = 0.062$ and 0.074 respectively). The corresponding values for 02 and 03 are 0.916 and 0.475.

Speaker	Sex	Year of birth	Accent 1	Accent 2: CVV	Accent 2: CVC	Accent 2: CV
EL (Meyer)	M	1899	34.0%		72.0%	
Skattungbyn08_02	F	1924	35.0% (N=12)	36.2% (N=7)	89.8% (N=5)	90.3% (N=8)
Skattungbyn08_03	F	1935	23.5% (N=13)	22.5% (N=7)	96.1% (N=7)	92.3% (N=11)
Skattungbyn08_04	F	1935	29.1% (N=12)	38.9% (N=7)	72.0% (N=5)	135.2% (N=11)
Skattungbyn08_01	M	1938	34.9% (N=11)	41.1% (N=6)	88.9% (N=5)	101.3% (N=10)

Table 4: Skattungbyn: Average timing of accent peaks in disyllabic scripted words related to duration of stressed syllable

Recall from the discussion of the Sollerön and Vinäs dialects in **Feil! Fant ikke referansekilden.** above that after the quantity shift, the former CV.CV class here showed a later peak than the Accent 2 words with etymological heavy root syllable. I hypothesized that

this was a result of a pre-quantity shift later timing of the peak relative to the syllable boundary which had been preserved when the vowel lengthened due to the shift. As noted in **Feil! Fant ikke referansekilden.**, Skattungbyn is such a pre-quantity shift dialect. As can be seen from the rightmost column in Table 4, the four speakers also here split into two groups, the same two groups that showed signs of a possible, incipient peak delay in Accent 2 words with long vowels. These two speakers, 04 and 01, also show a marked difference in timing between the CV.CV and the CVC.CV type.

It is tempting to speculate that we here see two stages in the acquisition of a Sollerön/Vinäs type system, where 02 and 03 represent an older system where the peak also in CV.CV words is constrained by the syllable boundary. 04 and 01 then represent a more advanced stage, where words with long vowel that have Accent 2 have begun showing signs of peak delay, and where the peak in CV.CV words have moved into the post-stress syllable, both features that can be observed in Sollerön and Vinäs.

A problem with this hypothesis is that there are geographically intermediate dialects in Orsa where such a system has not been explicitly noted, e.g. by Meyer (1937: 170-78) in his description of the two Orsa speakers who did not come from Skattungbyn. But a closer look at Meyer's description of the first of these, Erik Eriksson from Sundbäck, born in 1885, may be interpreted in favour of such a difference. In the Accent 2 CVV words, "the pitch rises through a little more than half of the vowel (in average 6/10)" (p. 172), while in the CVC type, Meyer stipulates the syllable boundary to fall around 3/5 into the intervocalic consonant, and this is where the peak occurs in this type (p. 173). In other words, in the CVV type, the peak occurs well before the end of the vowel, and thus the syllable boundary, while it falls near the syllable boundary in the CVC type. This is also the case in the CV type (p. 174). This is Meyer's own interpretations of the relevant contours. The difference does not strike one as equally clear on visual inspection alone of the same contours as they are reproduced in the text. In his description of the second Orsa speaker, Hans Bellin from Vångsgärde, about one

kilometre west of Sundbäck, born in 1872, Meyer is vaguer, but it appears that to the extent that there is a difference, it is smaller than the one he describes for Eriksson. In the CVV type the peak falls on the average at 8/10 of the vowel duration, while in the CVC type, the fall starts “more or less far into the consonants” (“mehr oder weniger weit in den Konsonanten hinein”, p. 177).

As noted above, the Skattungbyn correlation between quantity type and accent assignment is a very rare one, only documented in one other dialect, Langeland in southern Denmark. Given the fact that both dialects are spoken at the border between accentual and non-accentual dialects, this partial contrast dependent on quantity type may be interpreted as a temporal stage between no contrast and the normal state, contrast independent of quantity. From this perspective, it would be interesting to check whether traces of this distinction can be found in the dialects of Sollerön, Vinäs and East Mora, where the accentual contrast has reached a more advanced state than in Skattungbyn.

Table 5 shows the timing differences between the two types for all the Sollerön, Vinäs and East Mora speakers, ranked by age within each group. In Sollerön and East Mora it can be seen that the differences correlate with age, in that the older speakers show a positive difference, that is a later timing in the CVC type than in the CVV type. In the younger speakers, there is no difference or a weak negative difference. In Vinäs on the other hand, no such correlation emerges, but again, it must be pointed out that the number of data points is too small for solid conclusions to be drawn. That being said, a tendency that supports the hypothesis derived from the Skattungbyn results can also be observed, viz. that Accent 2 was established in words with short root vowel before it spreads to words with long root vowel.

Speaker	Sex	Year of birth	Timing CVC	Timing CVV	Diff. CVC–CVV
Sollerön90_02	M	1909	44.4%	36.1%	8.3%
Sollerön90_01	F	1935	42.4%	44.4%	-2.0%
Sollerön90_03	F	1949	49.9%	52.7%	-2.8%
EastMora90_02	F	1925	67.6%	59.2%	8.4%
EastMora90_01	M	1928	55.8%	49.5%	6.3%

EastMora90_03	F	1966	54.7%	55.3%	-0.6%
Vinäs08_01	M	1917	33.0%	40.7%	-7.7%
Vinäs08_02	F	1931	35.8%	42.5%	-6.7%
Vinäs08_03	M	1943	52,1%	51.9%	0.2 %

Table 5: Timing differences in Accent 2 words with short vs. long root vowel in Sollerön, Vinäs and East Mora.

In the cluster of villages named Våmhus north in Mora and bordering on Älvdalen, there is no tonal accent distinction. Since Meyer didn't record speakers from Våmhus, this seems to have gone unnoticed until it clearly emerged from recordings that I made in Våmhus in 2008. Figure 10 shows the average F0 contours of accented disyllabic words classified by accent type, Accent 1, Accent 2: CVV and Accent 2: CVC for one of the three speakers, 02, born in 1931. As can be seen, all three types are realized with an early peak, with no clear timing differences corresponding to the ones found in East Mora, Sollerön, Vinäs and Skattungbyn. The contours of the two other speakers from Våmhus, 01 born in 1942 and 03 born in 1934, show the same pattern.

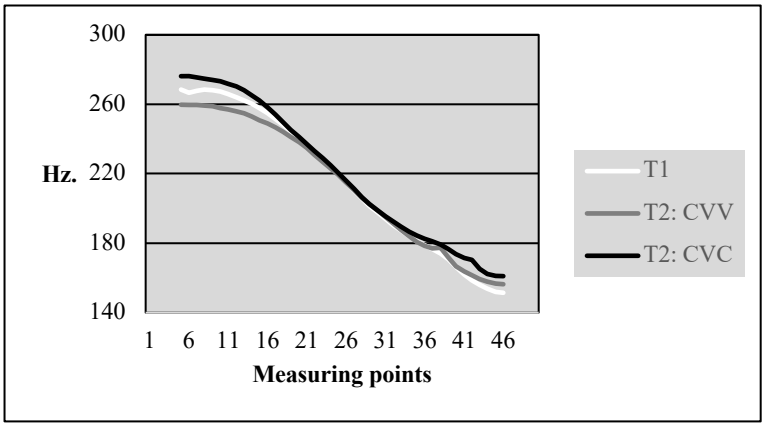


Figure 10: Våmhus: Absence of tonal accent contrast; averaged contours for speaker Våmhus_02.

This lack of accentual contrast fits nicely with the pattern described above. Våmhus can now be seen as the logical end point of the gradual decrease in Accent 2 peak delay from south to north. Under this interpretation of the facts, Våmhus is in other words a dialect at the northernmost edge of the Dala-Bergslagen Type 1 area where the accent contrast has not yet been introduced.

Table 6 shows the average peak timing of same four categories as was analysed in the Skattungbyn material, Accent 1 irrespective of root syllable quantity, Accent 2 with heavy stressed syllable and long vowel (CVV), Accent 2 with heavy stressed syllable and short vowel (CVC) and Accent 2 with light stressed syllable (CV). As with the Skattungbyn results shown in Table 4, the timing is relative to the syllable boundary.

Speaker	Sex	Year of birth	Accent 1	Accent 2: CVV	Accent 2: CVC	Accent 2: CV
Våmhus08_02	F	1931	26.4% (N=12)	32.7% (N=7)	28.0% (N=5)	38.3% (N=11)
Våmhus08_03	M	1934	29.6% (N=12)	28.2% (N=7)	36.9% (N=5)	32.4% (N=11)
Våmhus08_01	M	1942	33.0% (N=13)	38.8% (N=7)	42.8% (N=4)	50.0% (N=11)

Table 6: Våmhus: Average timing of accent peaks in disyllabic, scripted words in Våmhus related to duration of stressed syllable

The differences are very small, with none of the Accent 2 values being very different from the Accent 1 values, as was the case with the CVC and the CV types in Skattungbyn in Table 4. There are small differences in the 'right' direction, in the sense that the Accent 2 categories for the two male speakers show a slightly later timing than Accent 1.

As with Skattungbyn, I have also annotated accented words in the recorded conversation spoken by the youngest of the Våmhus speakers, 01.[31] Figure 11 shows the average contours for this speaker, based on the scripted material on the left, and on the conversation on the right. Even if the average peak of the CVC type occurs earlier in the conversation material than in the scripted material, the less steep fall in the former suggests a wider distribution of the values.

[31] The two others were much harder to understand than 01.

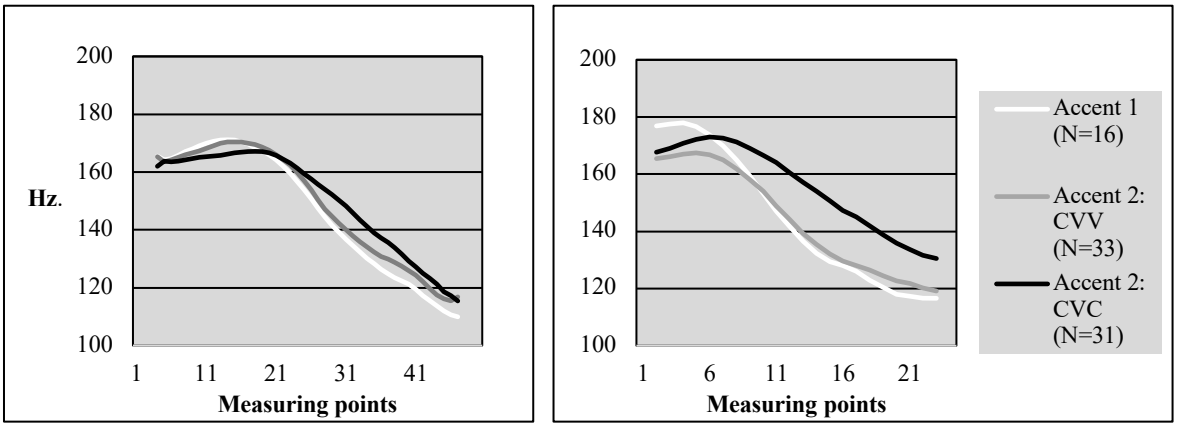


Figure 11: Våmhus: Comparison of contours derived from the scripted material (left panel) and conversation (right panel). Speaker Våmhus_01.

We should therefore take a closer look at the distributions behind the contours as well. Figure 12 shows how the peaks are distributed by category along the percentage scale. There is a clear difference between Accent 1 on the one hand and the two Accent 2 categories on the other, in that the latter shows a much wider distribution, even if the majority of data points also here are found in the lower part of the scale. Between the two Accent 2 categories there is a similar difference, in that the CVC distribution peaks at one interval above the CVV type.

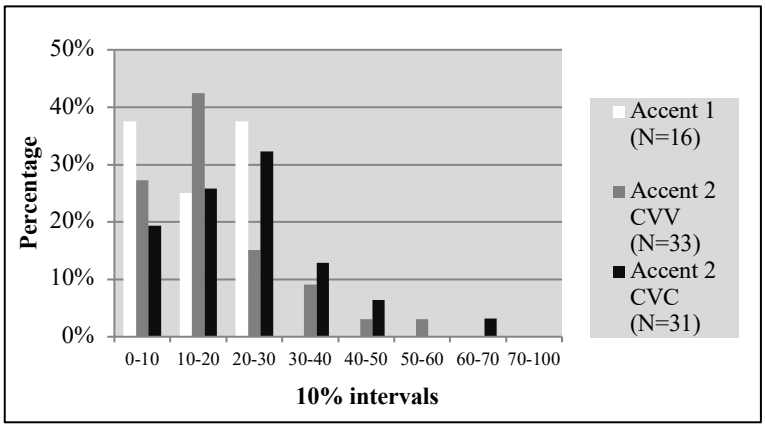


Figure 12: Våmhus: Distribution of individual peaks in conversation by accent category. Speaker Våmhus_01.

It is tempting to interpret these differences as support for a conjecture that at least this speaker shows an incipient accent contrast that seems to be led by the CVC type. So, while both the scripted and conversational data show that there is no accent contrast in the Våmhus dialect of

the fully developed type seen in the other dialects, the first signs of its appearance can perhaps be observed in 01's speech.

Although not a necessary part of the Type 2 first hypothesis, it is possible to construe a scenario where the Ovansiljan dialects represent the final stage of a change from Type 2 to Type 1, that the dialects in other words at an earlier stage had the same system as their northern neighbour Älvdalen. If this were the case, and if the change has taken place not too long ago, one would expect that generations older than our three speakers, born between 1931 and 1942, would have had a clearer contrast. To check this, I analysed three recordings provided by the Swedish Institute for Language and Folklore (Institutet för språk och folkminnen) in Uppsala. The speakers, all male, were born in 1860 (recorded in 1935), 1864 and 1873 (both recorded in 1948).[32] Only Accent 2 words that I recognized were annotated. The results for Accent 2 words are shown in Figure 13. In addition to the three speakers born in the 19th Century, I have included the CVC conversation contour for speaker 01, born in 1942, for comparison, copied from Figure 11.[33]

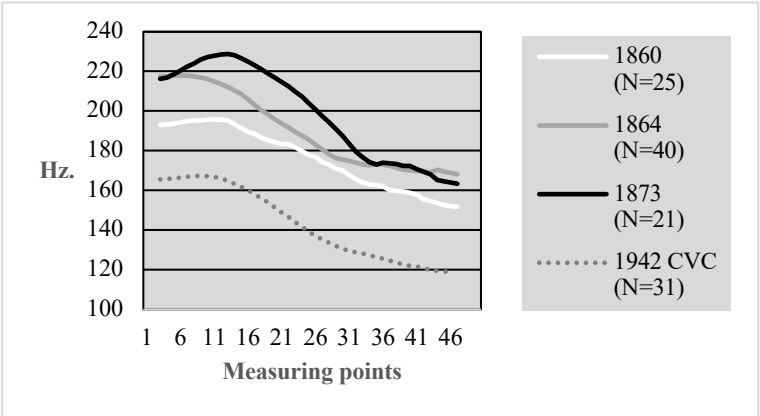


Figure 13: Våmhus: Average 'Accent 2' realizations from four speakers born between 1860 and 1942

[32] The Swedish Institute for Language and Folklore archive references are Gr00031:A&B, Gr02252:B and Gr02256:B + Gr02257:A.
[33] The Våmhus conversation recorded in 2008 was originally analysed with the number of measuring points set to 25 instead of 50 in the Pitch Dynamics script. In order to make 01's contours comparable to the older ones, I inserted blanks between each measuring point and then interpolated values from the preceding and following value.

No discernible changes seem to have taken place over the generations between the 1860s and the 1940s. I therefore conclude that the absence of tonal contrast goes back at least to the generation born early in the 19th Century. Since the tonal contrast arose during the Mediaeval Age, there is of course still a gap of several hundred years of which one cannot know anything for sure about how accented syllables were realized, neither in Våmhus nor in any other North Germanic variety. But in the absence of stronger arguments to the contrary, the least radical option is that Våmhus never had such a contrast. The fact that all (or at least most) surrounding dialects today have the contrast, is in my opinion not a strong argument in favour of Våmhus at some earlier point in time having had one. The more likely scenario is rather the one proposed here, that the other dialects of Ovansiljan at some time in the recent past also lacked the contrast, and that the unusual features in these dialects and the incremental peak delay also in dialects further south bear witness to this.

Above I showed that there was a small difference in the speech of 01 in the distribution of peaks between the CVC type and the CVV type of Accent 2, and that both differed from Accent 1, see Figure 12 above. If this as suggested is an incipient appearance of a contrast, a similar difference in the older data would invalidate this conjecture. I therefore checked whether there was such a difference between the two types in the older material. There was not. No such tendencies can be seen in the distributions of the older speakers.

6.4. Summary

Two patterns have emerged from the analysis in this section, one solid and as far as I can see, uncontroversial, based on generational differences, and one more tenuous, based on small age-related individual differences within dialects and small differences between dialects. The first was observed in communities situated in the southern part of the two valleys, and shows that over a few generations, the Accent 2 peak has migrated across the boundary between the accented, stressed syllable and the following unstressed syllable. Even if the number of

speakers investigated is limited, the patterns are consistent to a degree that it is hard to believe that they are spurious.

The second pattern emerges from smaller differences among the speakers from the more northern Mora and Orsa. The chance that they are accidental is therefore greater. What speaks in favour of them reflecting real patterns, is their coherence when seen from a tonogenetic perspective. The correlation between peak delay and age seen in the Sollerön type, the difference between words with long and short vowel, clear in Skattungbyn and perhaps at the point of extinction in West Mora, and the equally weak signs of an emergent accent distinction in Våmhus all suggest that the accentual distinction is a relatively recent feature of Skattungbyn and the West and East Mora dialects, and that at least one speaker of the Våmhus dialect is in a very early stage of accent acquisition.

How recent is harder to decide. But given the peculiar development in the West and East Mora dialects contingent on the quantity shift, the tonal accent distinction must have preceded the quantity shift, since the third accent in the Sollerön type and final stress in East Mora most probably was an effect of later timing of the Accent 2 peak in the class with etymological short root vowel. Since the quantity shift as argued in section **Feil! Fant ikke referansekilden.** above seems to have taken place during the early decades of the 20th Century, the latest possible point of time for the introduction of the accent contrast in Sollerön and East Mora must have been the final half of 19th Century.

7. Discussion

7.1. Diffusion driven by peak delay

The hypothesis that emerges from the results presented in the previous section is that at some point in the past, Type 1A also characterized the lower part of Dalarna. At that time, the upper East Valley, Ovansiljan, had no tonal contrast. From the lower part the accent contrast has spread north, first introduced in each dialect as a minimal peak delay in Accent 2 words, modelled on the neighbouring source dialect.

Once the contrast was acquired, continued peak delay in Accent 2 words over subsequent generations then increased the difference in timing between the two accent peaks. This hypothesis implies that the further up the valleys one goes, the smaller the timing difference between the two peaks will be, exactly as we have seen is the case. By this hypothesis, it does not come as a surprise that there are still dialects near the northern border of the Type 1 area to which the contrast has not yet diffused, that is, dialects with no contrast where all primary stressed syllables are realized with an early accentual peak.

An important assumption here is that phonetically grounded changes are not automatic, but processes that may kick in and disappear in languages and dialects at different points in time. When the tonal timing contrast was established and phonologized during the late Mediaeval Age, I assume that the two accents emerged as two separate, phonological units that subsequently have developed independently of each other in the sense that a certain change can happen to one without it necessarily hitting the other at the same time. For instance, the Stavanger Accent 1 change referred to above apparently left the Accent 2 melody unchanged. In Flekkefjord, both accents appear to have changed in a kind of chain shift.

Finally, changes may arise spontaneously in a given dialect, such as is most probably the case in Stavanger. But they may also be the result of spreading, where different sociolinguistic forces may play a role. This may have been the case in Flekkefjord, perhaps combined with an activated drive towards delay, where as noted by Hognestad most dialects in the surrounding region appear to be of the 1B type. In Dalarna, the contrast appears to arise in new dialects by spreading from a neighbouring dialect. Once established as a minimal and perhaps partial contrast, as seen in Skattungbyn, peak delay in Accent 2 words will over time make the contrast more robust.

7.2. Implications for the tonogenesis problem

One of the places where the two hypotheses tell different stories with respect to diachronic roots, is the lower part of the Dala-Bergslagen, which according to the Meyer (1937); (1954) tables is a Type 1B dialect. The Type 2 first hypothesis will have to derive it from an earlier Type 2 system. The Type 1 first hypothesis on the other hand implies a simpler story, viz. that the Dala-Bergslagen Type 1B has developed from an earlier and close to the original 1A pattern by a process that is exactly the same as one from Flekkefjord described by Hognestad (2008); (2012: 262ff.), viz. migration of the Accent 2 H across the boundary between the stressed and the post-stress syllable.

A full-scale critique of Riad's "Type 2 first" hypothesis as briefly presented in section 0 above lies beyond the aims of the present article. But the results presented in section 0 add to the evidence already established in favour of 'Type 1 first' in the sense that additional examples of change instantiated as peak delay have been added to the cases in south-western Norway presented in section 0.

If we assume that the dialect splits took place by gradual changes in the synchronization between tonal units and the syllabic-segmental string, this can in principle take two courses. *Retraction* will result in earlier, and *delay* will lead to later realization of the F0 peaks with respect to the syllabic-segmental string. This is not an uncontroversial assumption, since change via spreading also may take place as a gradual replacement over time of an old pattern by a new one through an alternation between two categorically distinct forms where the newer one gradually supersedes the old one. This is a well-known pattern seen in a great body of sociolinguistic studies. But as documented in this article, this is not how the North Germanic tonal accent patterns seems to change. Instead, changes in tonal timing appear to be gradual much in the way vowel patterns have been shown to change, see e.g. Labov (1994: Part B).

Above, several examples of change by peak delay have been documented, including the results analysed in this article. On the other hand, no equally well-documented examples of change by peak retraction exist as far as I know. However, Riad's account of how he thinks

the Dala-Bergslagen pattern developed from Central Swedish Type 2A *assumes* retraction. (Riad 2000c; 2009). Figure 14, reproduced from Riad (2009), shows how the steps are conceptualized that lead from the Central Swedish Accent 2 melody to the one found in the lower DB area today, both in compounds and simplex, disyllabic words. The first step is leftwards movement of the final peak under pressure from the final L, which then results in gradual annihilation of the initial peak. Finally, the remaining, single peak retracts even further, resulting in association near the stressed syllable. This is the typical form of a Type 1B variety found in lower DB today, and which Riad refers to as "DB proper".

The changes documented in section 0 on the contrary suggest that DB proper should be seen as the result of the peak delay processes that characterize the Dalarna dialects as documented in this paper. The Type 1 hypothesis in other words predicts that Dala-Bergslagen at an earlier stage was a 1A system like the ones found in Ovansiljan today, and that Accent 2 peaks over time have come to be realized incrementally later, resulting in a 1B system. This would be a process like the ones that have been documented from the lower part of the valleys by Fransson and Strangert (2005) for Leksand and Rättvik and by the present paper for Malung.

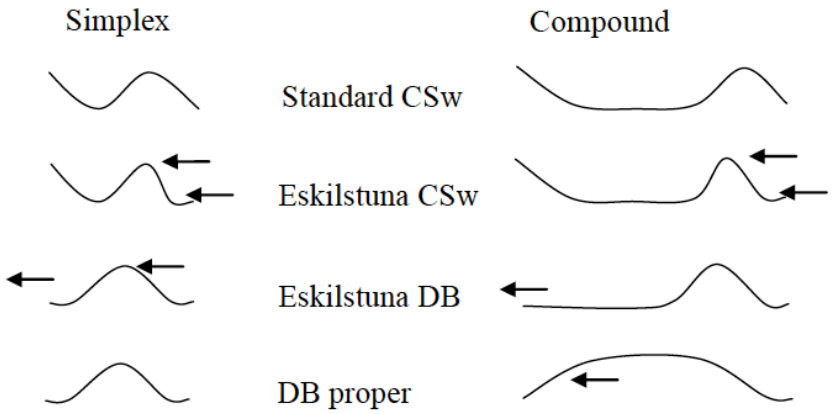


Figure 14: A graphic illustration of how the two-peaked Type 2A variety of Standard Central Swedish can have developed into the Type 1B variety of Lower Dala-Bergslagen. (from Riad 2009: 16)

An interesting question that the present analysis on the other hand cannot say anything definite about, is the diachronic relationship between Dala-Bergslagen Type 1B and the Type

2A dialects further south towards Stockholm. As shown by Riad (2009), they appear to meet and co-exist in the town of Eskilstuna, where the Type 2 forms are often realized with the stød-like final fall that Riad associates with an incipient stød. By this account, the Type 2 realizations are about to give way to Type 1, see again Figure 14 above, where the two patterns are referred to as Eskilstuna DB and CSw respectively.

Riad's data, as presented in (2009), are not extensive and systematic enough to settle the question. A substantial and systematic sample of speakers categorized by at least the traditional sociolinguistic factors age, sex and social background, and possibly different parts of town, would be needed to establish if one variant is in the process of giving way to the other. A quantitative analysis, e.g. based on the methodology outlined in section 0 above, could also establish if the two variants are categorially different or part of a continuum. Only if the latter were the case and the change were in the direction of Type 2, peak delay could be invoked as a possible driving force in the change. If instead the variation is characterized by a categorial alternation, or if there is indeed a retraction process going on, one should perhaps ask if influence from the nearby, prestigious Stockholm dialect could be the source of the Eskilstuna Type 2 variant, even if it differs somewhat from Stockholm with respect to the timing of the final HL fall.

This indeterminacy notwithstanding, I conclude that the empirical results presented in section 0 strongly suggests that the DB Type 1B has developed from an earlier 1A pattern, and that the Type 1 first hypothesis that peak delay can have been the common driving force behind both the appearance of the tonal accent contrast and the subsequent dialect splits, with Type 1 as the common starting point. They enlarge the body of evidence that shows that peak delay is still an active factor in tonal change in North Germanic. At the same time, no empirically solid evidence seems to exist that shows inter-generational transitions from

double-peaked Type 2 into Type 1 by peak retraction. Riad's proposal to this effect, as shown in Figure 14 therefore remains a conjecture in need of empirical coverage.[34]

But the opposite, a transition from Type 1B into 2A by further peak delay and the formation another peak associated with the stressed syllable, has not been described *in vivo* either. This is certainly a weakness with the Type 1 hypothesis as it stands today. This type of transition has so far only been modelled. Hognestad (2012: 127ff.) shows how Norwegian Type 1 and 2 dialects can be classified and related to each other based on different degrees of peak delay.[35] In his English summary he sums up his model in these words:

> This dialect comparison shows that the proposed peak delay model is capable of accounting for all the melody sets found, the basic idea being that when focus H migrates rightwards, the low starting point for the rise towards H is eventually reanalyzed as a new L target on the syllable left behind by H. The delay effect itself is perhaps particularly likely to occur with a focus tone, given that the peak of these tones is typically on a higher F0 level than other H tones. The time it takes to reach the F0 maximum is consequently slightly longer and simply triggers the delayed peak position. Also, as focus H migrates, there are consequences for the right boundary of the accentual domain. In short, once the position of focus H is established in the two accentual melodies of the dialects in question, the entire makeup of all melodies is fully predicted by the suggested model of analysis. (p. 262)

But there are places to look for on-going transitions from Type 1B into 2A. Three Accent 2 contours in northern Uppland in Sweden, Uppsala, Vaksala and Väddö, show an initial fall without a preceding peak according to Meyer's 1954 survey at the end of the book. An investigation along the lines reported in this article might reveal if an initial peak has formed since the time Meyer made his recordings. Similar Accent 2 realizations are found in the West Norwegian town of Egersund, between Flekkefjord and Stavanger. Hognestad (1997: 91–115) surveys the Accent 2 realizations of five speakers. Four of these show an initial fall in their averaged melodies. Only future investigations involving more than one generation of speakers can reveal whether these dialects are on their way towards a double-peaked Accent 2 realization.

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[34] Yip (2002: 10) notes that tone delay is more common than tone retraction: "[T]one spread or shift to the right is very common, but tone shift or spread to the left is much rarer".

[35] A similar model is developed in Bye (2004), with the exception that here both peaks and troughs can undergo delays. In Hognestad's model and the one propounded in this paper, peak delay only is assumed to be the driving force, in accordance with the findings in the phonetic literature referred to above that *peaks* are often subject to delayed realization.

7.3. Älvdalen as counter-evidence?

If the dialects of Mora and Orsa are archaic with respect to the tonal accent contrast, their neighbor to the north, Älvdalen with its Type 2A, must be on the innovating side. Since Älvdalen by many is regarded as the archaic dialect per excellence of continental North Germanic, this may appear as counter-intuitive. But as noted in section 0, Älvdalen to a considerable degree shares this status as archaic with the dialects spoken in Mora and Orsa. At the same time, all the Ovansiljan dialects show several innovating features, such as full diphthongization of high, long vowels as in English and German (Levander 1925: 150f.). This means that one cannot off hand assume that any "deviant" feature of the Älvdalen dialect, such as tonal accent realization, is archaic.

According to the Type 2A first hypothesis, Älvdalen represents the more archaic type, having conserved the Type 2A that according to this hypothesis corresponds most closely to the original melodies (Riad 1998; 2006). One of Riad's arguments is the assumption that all dialects characterized by the so-called vowel balance prosody also belong to the Type 2 group. Vowel balance refers to a split that developed among disyllabic words in Old Scandinavian, whereby final unstressed vowels in words with heavy stressed (initial) syllable developed different qualities than the corresponding vowels following light stressed syllables. Thus, in Ovansiljan, Old Swedish /a/ was retained as /a/ after heavy stressed syllables and rounded to /ɔ/ after light. In most dialects, the quantity shift has later lengthened the light root syllables, but the split in the final vowels has survived. The vowel balance dialects are therefore all dialects where unstressed, final vowels vary with Old Scandinavian weight in stressed syllables, irrespective of whether the old light syllables have later been lengthened or not.

Since the rounding of final /a/, based on manuscript evidence, had taken place by the 14th Century, this implies according to Riad's hypothesis that the double-peaked Type 2 pattern must have been in place by the same time. And since the accent contrast arose during the Old

Scandinavian period, that is, between 900 and 1300 AD, this narrow time frame can according to Riad not have been enough for Type 2 to develop from Type 1 and then spread as far as it has. Therefore, Type 2 must have been there in the first place.

In the absence of decisive, supporting evidence, it is difficult to see how this geographical implication forces us to conclude that the existence of vowel balance presupposes the previous existence of Type 2. They might as well be seen as two independent changes that over some period of time during the Mediaeval Age have spread within the same Central Scandinavian innovation area. Nor is the claim correct. Kristoffersen (2010) shows that the Type 1 dialects in Ovansiljan are all characterized by vowel balance and rounding of final /a/ after light, stressed syllables.[36] To assume that these dialects were formerly Type 2 would be begging the question as long as independent evidence for these dialects having formerly had double-peaked accent is not provided to bolster the tenuous correlation with vowel balance,.

And as pointed out by Bye (2011), if Type 2 developed from Type 1 and diffused throughout Central Scandinavia before the 14th Century, it is only one of several phonological changes that came to cover the larger part Central Norway and Sweden at this time. In addition to vowel balance and the ensuing vowel harmony, the development of retroflexes, including the retroflex flap (Haugen 1976: 274ff.), can be seen to belong to the same wave that came to cover Central Scandinavia in the course of a few centuries. Confronted with this evidence, Riad's 'not enough time' argument founders.

8. Concluding remarks

The history of the phonetic realization of the North Germanic tonal and intonational prosodies is difficult to reconstruct, since it has left no traces in the surviving mediaeval manuscripts. This leaves us with internal reconstruction based on dialect differences in order to gain insights in how and from what kind of melodies the Swedish and Norwegian tonal accents developed.

[36] There are also traces of vowel balance in the Type 1 dialects spoken in the southern part of Nordland county in Northern Norway, described in Christiansen (1946-1948: 130-36)

To simplify considerably, the first step in such a reconstruction must be to establish the synchronic variation space. The next is to evaluate the varieties making up this space against what is known about common and less common patterns of prosodic change, in order to establish the most likely candidate based on such internal criteria. This could be one of the varieties spoken today or it could be some reconstructed candidate from which today's variants can most naturally be derived. When such a candidate has been established, one must then ask to what extent the geographical distribution of the variants and other external criteria support the hypothesis.

The Gårding typology introduced in section 0 with its four phonetic types represents a reasonably comprehensive variation space. While later research indicates that this typology is not exhaustive,[37] it comprises the Type 1A system that in my opinion is the more likely candidate and the one defended in this article, as well as Type 2A that is argued to be closest to the original melodies by Tomas Riad.

It seems quite difficult to identify parallels in other languages to the story behind Riad's hypothesis, tonal marking of secondary stress following the main stress, where the stress has later been eliminated while the tone itself survived. The driving force behind the Type 1A first hypothesis, peak delay, is on the other hand a fairly common phenomenon. It can explain how the tonal contrast arose in the first place, by the what was most likely an intonational H*L accent being delayed in plurisyllabic domains, while it due to limited space did not delay in monosyllabic domains. And, it can also explain how the Type 1B and by conjecture how Type 2 arose. On this account, Type 1A is the oldest and most probably quite close in form to the original melodies, while Type 2, which today dominates most parts of Norway and Sweden represents an innovation which has come about by a more or less continuous process

[37] Since the typology covers only Swedish and Norwegian, Danish stød is not part of it. In addition, many dialects spoken in the Trøndelag region in Norway have been shown to have double-peaked Accent 1 as well as Accent 2, characterized by later timing of the first Accent 2 peak compared with that of Accent 1 (Kelly 2015; Kristoffersen 2007a). Finally, there may be reasons to define as a separate transitional type between Type 1 and 2 dialects mentioned above where the first 'peak' of Accent 2 looks more like a fall from a mid-level than an actual phonetic peak. Already Meyer (1937: 236) characterized this as a transitional type.

of peak delay through the centuries that have elapsed since the contrast was established some time during the Mediaeval Age. The detailed discussion of the peak delay patterns in the Dalarna data in this article to a considerable degree supports this hypothesis.

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Gjert Kristoffersen

Department of Linguistic, Literary and Aesthetic Studies

P.O. Box 7805

NO-5020 Bergen

Norway

[gjert.kristoffersen@uib.no]