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## Scandinavian accent typology\*

### Abstract

Most of the Scandinavian languages and dialects exhibit a tonal accent distinction. Invariably the lexical tone is associated to the primary stressed syllable. The chief variables which instantiate the accent typology include the value of individual tones (L, H, LH), the use of spreading and interpolation, and the behaviour of the prominence tone (usually, but not always, the tone used for focus). Variables related to the prominence tone involve the association (or not) to a secondary stress, and rightward/leftward orientation (i.e. alignment). Beside the phonological typology, the article briefly discusses a couple of distributional sub-typologies relating to morphology and the lexicon.

### 1. Introduction

Several of the Germanic languages of Scandinavia exhibit word accent systems beside their stress systems. The accent systems are tonal in Swedish and Norwegian, and *stød*-based in Danish. While these types are quite different from one another in their phonetic, phonological and distributional properties, there is no doubt that they are historically related. In this article, I shall give a description of the central properties of the tonal typology, based on a transparent set of parameters, avoiding some of the complications of both empirical and theoretical detail. This is necessary since our knowledge of how the accent systems work is still rather limited, partly because of a shortage of in-depth descriptions of the extant variants, partly because of conflicting interpretations of the same phonetic material. Enough is however known for it to be worthwhile to draw up some general ramifications for a phonological typology.

A typology of the Scandinavian accent systems could be based on the phonetic contours of tonal word accents in a phrasal context (including a focus tone and boundary tones). This is the basis for the accounts of GÅRDING (1975, 1977), FINTOFT (1970) and FINTOFT et al. (1978). The typology of GÅRDING (1975, 1977), largely based on data from MEYER (1937, 1954), provides a division of Scandinavian accents into four tonal types based on the number of peaks (one or two) and the timing of the first (or only) peak (Central Swedish,

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Dala, Göta and South Swedish<sup>1</sup>), one non-tonal type (Finland Swedish), and one *stød*-type (Sjælland Danish). Norwegian dialects are only marginally included in this description. However, it is well known that e.g. the West Norwegian system of Bergen is similar to South Swedish, and that the North Norwegian system of Narvik is similar to Dala.

A phonologically more articulated typology emerges if the autosegmental phonological properties of tone accent are brought to the fore. This involves the segmentation of the contour into separate tones and the construction of a grammar where each tone is accounted for in terms of how it holds itself in relation to the segmental string, the syllables, the stresses and the word edges of the focused word or phrase. While the lexical tone is invariably associated to the primary stressed syllable, the behaviour of the following tone (often a prominence tone, signalling primary rhematic status) varies quite widely (BRUCE & GÅRDING 1978: 226f.). Typically, one must look at longer words which provide different possible association sites for the prominence tone.<sup>2</sup> BRUCE (1977: 50) provided a segmentation of the pitch curve into a lexical part and a intonational part (focus and boundary tones), which was employed in the typology proposed in BRUCE & GÅRDING (1978). A more recent account of this type is provided in LORENTZ (1995), and, with a wider Scandinavian coverage, in RIAD (1998b, 2003). The phonological level allows for the clear statement of generalizations across dialects, which may on the one hand sound quite different from one another, on the other hand share the same grammar. A case in point is the Dala system which has opposite tone values from the Central Swedish system, yet has essentially the same tonal grammar. I pursue here an analysis in phonological terms, focusing on the central representational differences which have reasonably clear phonetic correlates in terms of pitch and synchronization. The focus is on a synchronic description, which means that I shall leave to the side both the specifics of the constraint interaction which generates the different types (cf. RIAD 1998b) and the historical development of the typology (cf. RIAD 1998a, 2003).

Concerning Danish *stød*, it seems less relevant to include it in a synchronic typology. The *stød* is describable in terms of tones (ITÔ & MESTER 1997) or directly as an individual, prosodic property ‘*stød*’, the latter being the tradition in phonological and distributional analyses (HANSEN 1943, FISCHER-JØRGENSEN 1989a, b, BASBØLL 1995, 1998, 2003). It is clear that the Danish system now works quite differently from the northern tonal neighbours. For instance, one cannot forcefully argue that there is a lexical tone in Danish, and thus it is not part of the same typology (anymore). It is therefore left to the side here.<sup>3</sup>

<sup>1</sup> I use here the same terms as I will use throughout, hence not necessarily the same as those used in work I refer to.

<sup>2</sup> I use the term “prominence tone” in a theory-neutral way, the purpose being to avoid involving functional properties of the various tones into the phonological description. These vary between dialects.

<sup>3</sup> Because of the uncontestable historical relationship, however, there is no way around the fact that the gap between tone (Swedish, Norwegian) and *stød* (Danish) must be bridged. A tonal description of *stød* does this trivially in terms of representation, while a different definition of *stød* needs to explain not only how the gap came to be, but must also account for the origin of a new prosodic type. This would require something like what HAUDRICOURT (1954) did in his work on South East Asian languages, where the gap between segmental and tonal features carrying “the same” opposition was bridged. The historical relationship of *stød* and tone is invariably pointed out in overviews of the Scandinavian prosodic systems, based on the clear distributional correspondences. Still, the details of

### 1.1. 'Accent 1' and 'accent 2'

As traditionally used, the term “word accent” refers to one of two types of melodies which occur in single words in a focused context, typically citation forms. A citation form will thus have either accent 1 (or “acute”) or accent 2 (or “grave”). I will continue to use the terms accent 1 and accent 2 to refer to the whole contours but in order to avoid confusion, three things about these terms need to be pointed out.

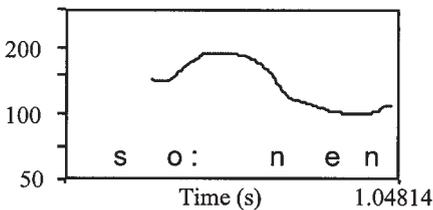
First, a detailed analysis will decompose the word contours into separate tones which have different structural origins (BRUCE 1977). Thus, it is only a small part of the contour which may originate in the lexicon, and which therefore is similar to tones as we know them in the much more elaborated tone languages like those of the Sino-Tibetan, Mon-Khmer, Otomanguean and Niger-Kongo language families (YIP 2002: 17f.). Thus, the lexically distinctive part of the contour is just one tone, located in the primary stressed syllable.

Second, in many descriptions (including this one), it is only the contour of accent 2 which includes a lexical tone. The rest of the contour contains tones of different structural origin, viz. prominence and/or focus tones, boundary tones. The lexical tonal distinction is thus often cast as a privative one, where accent 2 contains a marked property and accent 1 is the default, that is intonational tones only (SWEET 1877: 155, HAUGEN & JOOS 1952, HAUGEN 1967, LORENTZ 1995, ENGSTRAND 1997, RIAD 1998b). However, some researchers have argued that both accents contain a lexical part (BRUCE 1977, GUSSENHOVEN & BRUCE 1999; cf. also BRUCE & HERMANS 1999).

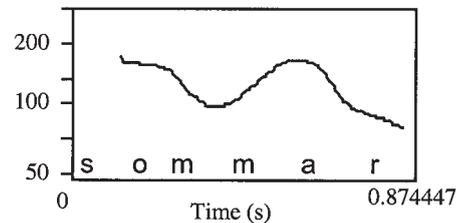
Third, it must be pointed out that the extra tone of the accent 2 contour may have two origins, one of which is lexical (as stated above), the other being prosodic (“post-lexical”). Thus, the prosodic context of two stresses in a form, typically a compound, may cause accent 2 in an output form, even though neither of the morphemes in the structure has a lexically specified tone.

These properties are illustrated below with examples from the Central Swedish variety of Stockholm.

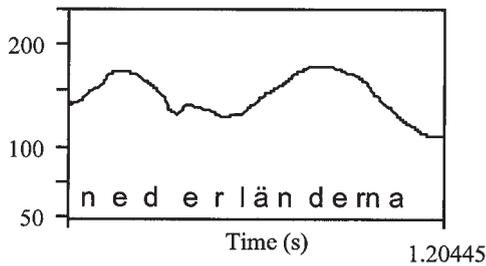
(1) Accent 1, simplex: *sonen* ‘the son’



(2) Accent 2, simplex: *sommar* ‘summer’



how the split came to be is an issue that has received rather little attention. Two, conflicting theories are given in LIBERMAN (1982) and in RIAD (2000a/b). A diachronic perspective of the typology as a whole is given in RIAD (2003).

(3) Accent 2, compound: *Nederländerna* ‘The Netherlands’

It can readily be seen in (1) and (2) that accent 1 is a LHL contour and that accent 2 is a HLHL contour, and that the difference is that accent 2 has an initial H tone, which is lacking in accent 1. In the compound in (3) we again see the accent 2 contour, despite the fact that *neder* ‘down, low’ and *länderna* ‘the countries’ are both accent 1 words in isolation.

Beside the lexical tone<sup>4</sup> of accent 2, which will be the first tone in the sequence considered, there are two more tones to identify. Functionally, these tones may be different and the most neutral way to treat them would be to call them tone 2 and tone 3, but for perspicuity I shall refer to them with the relatively neutral terms “prominence tone” and “boundary tone”. Either of these, or both, appear to be able to carry the focus function, where “focus” simply refers to rhematic status in a simple declarative. In order to enhance identification, I shall add diacritic marks to some of the tones, underscore for the prominence tone, and a right square bracket for the boundary tone. The lexical tone is left unmarked. Thus, the description of the tonal composition of Central Swedish accent 2 will be as indicated below.

## (4) Central Swedish (Svea)

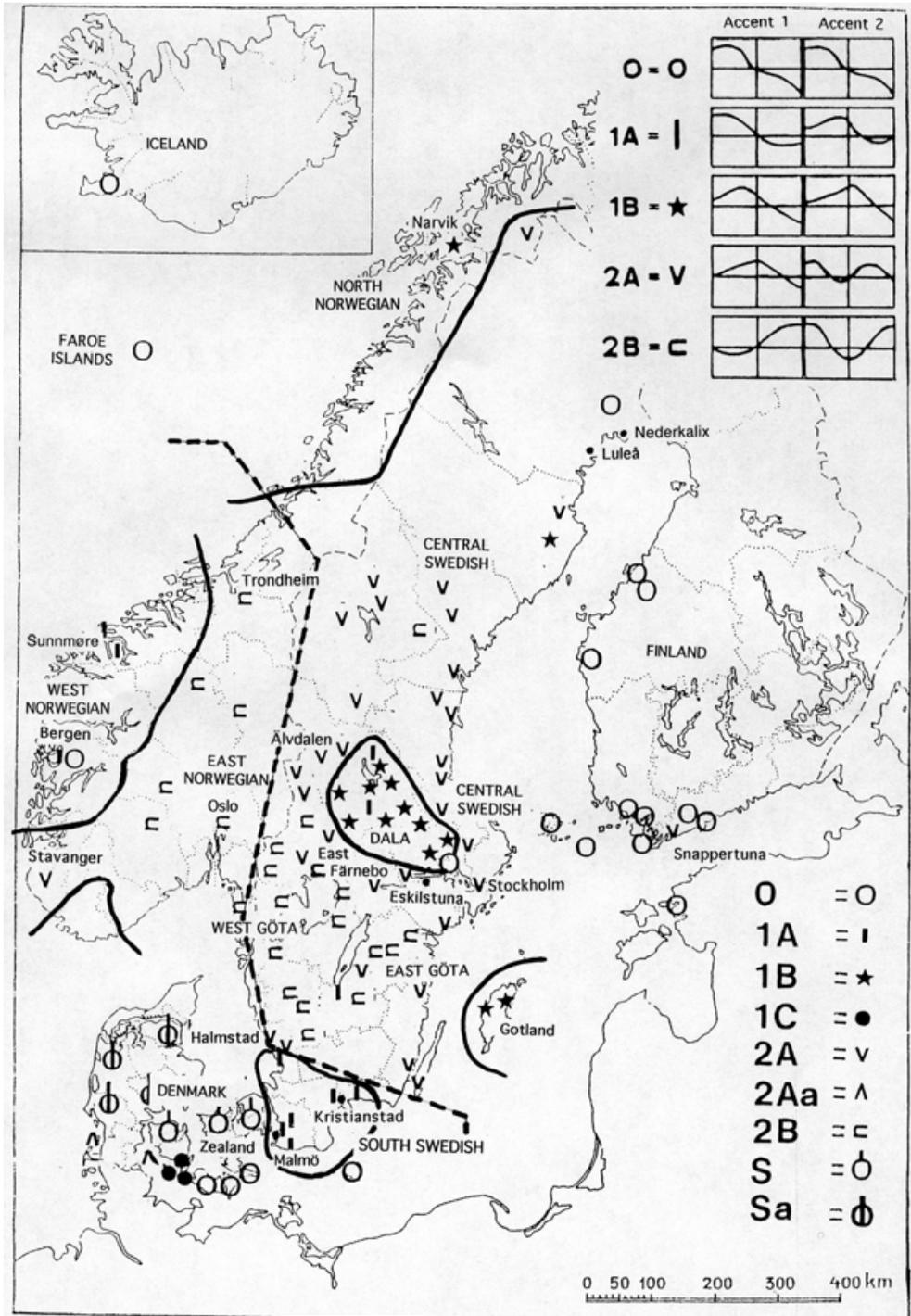
H	<u>LH</u>	L]
lexical	prominence	boundary

## 1.2. Geography

Tone accent dialects occur all over Scandinavia, except the northernmost parts of Norway and Sweden, most Swedish dialects in Finland, most Danish dialects, Iceland and the Faeroe Islands. Also, a variety in eastern Svealand and one in the area surrounding Bergen lack distinctive accent. These facts are summarized in the map in (5), which is based on the map in GÅRDING (1977: 47). The typology indicated on the right-hand side is based on the shape of the accents in disyllabic simplex words, and the locus of peaks (cf. GÅRDING 1975, 1977, GÅRDING; BRUCE & WILLSTEDT 1978). The legend in the upper right corner indicates which dialects have two and which ones have one peak for accent 2. Several marks and place names discussed in this article have been added to the map.

<sup>4</sup> I shall continue to refer to this tone as the “lexical” tone also when it is the question of a prosodically induced (post-lexical) tone.

(5) Overview of the Scandinavian accent systems



Work on the tone accent typology in the Swedish tradition starts with MEYER (1937, 1954) and it is his data for Swedish which forms much of the empirical base for the dialect types registered on the map. Based on work by FINTOFT et al. (1978), MJAAVATN (1978), LORENTZ (1995) and some other non-typological work like (SELMER 1927, FRETHEIM & NILSEN 1989, NILSEN 1992, KRISTOFFERSEN 1993 and ABRAHAMSEN 2003), a number of symbols have been added for Norwegian. The isoglosses drawn with unbroken lines indicate dialect types based on the value of the lexical tone of accent 2. In the northern, western and southern peripheries of Norway the lexical tone is L, as it is also in southern Sweden and in Dala and Gotland (KLINTBERG 1885). The rest of the dialects have a H lexical tone. The isogloss marked with a broken line concerns accent in compounds. The dialects to the east of this isogloss have accent 2 as the general pattern in compounds, assigned in the prosodic, post-lexical manner, while the dialects to the west and south have variable accent in compounds, depending on both lexical and prosodic information (cf. section 3.2). All isoglosses are approximations and here and there they are more tentative than elsewhere. In part this depends on lack of data, and in part on differences of descriptive model used by the researchers, on whose work the typology is based.

### 1.3. *The basis for a typology*

Before turning to the systematic variation it might be worthwhile to mention the grounds for assuming a typology in the first place. There are several factors that firmly establish the typological variation as coherent. First, there is the timing of the contours. It is invariably the case that the lexical tone of accent 2 occurs before the shared part of the accent contour. This causes a delay of the intonational part of the contour in accent 2 in all tonal dialects. Second, there are the major distributional generalizations which recur in dialect after dialect. Thus, so-called weak feminines (*kvinna* ‘woman’, *gata* ‘street’), disyllabic infinitives (*tvätta* ‘wash’, *spela* ‘play’), 1<sup>st</sup> and 2<sup>nd</sup> declination plurals (*flick-or* ‘girls’, *rut-or* ‘window panes’; *bil-ar* ‘cars’, *mås-ar* ‘gulls’), derivations with suffixes *-ning*, *-ad*, *-lig* (*land-ning* ‘landing’; *mån-ad* ‘month’; *van-lig* ‘ordinary’), and many more classes of words systematically exhibit accent 2. Third, tonal dialects normally require a posttonic (unstressed or stressed) syllable for accent 2 to be licensed. A few dialects have so-called circumflex accent in some monosyllables, that is accent 2 under apocope, with lengthening of the remaining syllable. Fourth, the Scandinavian area that exhibits tone (or *stød*) is geographically contiguous. Fifth, the tonal dialects seem to share a property of having contrary values of the sequenced tone, such that, by and large, if the lexical tone is L, the following (prominence) tone is H and vice versa. This could be described as wide-spread obedience to the obligatory contour principle (LEBEN 1973). There is thus no doubt that the tonal dialects form a coherent typology.

The question of how to do typological work in intonation does not have a straight answer, but must be adjusted to the empirical situation at hand. A few methodological remarks are therefore warranted. Detailed information is available for a handful of specific dialects, but there is no coverage of all dialects within a given major type. If we are to approach the typology as a whole, it is therefore necessary to focus on general properties. As a consequence, the description of an individual dialect is going to look quite different in a monograph concerned with the intonation of that dialect compared to the treatment of it here. For one thing, we look here at a very limited context, namely long words (com-

pounds) in citation form, hence declarative-like pronunciations in focused position but with no surrounding context. A more detailed investigation would look at prefocal and postfocal positions in addition, and also work out the differences between different intonations (question, exclamation, declarative) for several word types. Also the details of the relationship between the tones and the phonological string are likely to look different between a detailed and a general description. Here we are in the phonological domain and differences of theory surface in the comparison of analyses. Thus, ABRAHAMSEN (2003) in his elaborate analysis of the Norwegian variety of Sunnmøre assumes tonal synchronization at the level of the mora, while we shall stop at the level of the stressed syllable. The point is that if we involve the level of the mora in the typology, we are already unable to provide firm enough empiry for the typology to hang together. Instead, I shall rely on the most steady generalizations and describe the less clear variation in a way that allows for further variation within a major type to be included later, in more in-depth analyses.

At the same time, it is important to make some clear phonological statements, or the description will lack a backbone. The descriptive target, then, will be a description of dialect types, rather than dialect tokens.

## 2. Typological parameters

Comparison of accents across tonal Scandinavian dialects should heed several factors, primarily melodic characteristics and grammatical behaviour of the prominence tone. Further distinctions which should be included in a fully worked out typology involve the tonal vs. non-tonal distinction, whether or not *stød* is phonologized. A minor typology of particular interest is the accent variation in compounds, which is a phenomenon that is delimited to a subset of the dialects (cf. section 3.2). Also, there is interesting variation regarding where the primary prominence is located in compounds, giving rise to a distinction between initial and late prominence. We shall focus on the typology of the major tonal types and treat the subtypologies more briefly.

### 2.1. Melody

Let us start, then, with the shape of the contours for accent 1 and accent 2. This parameter is naturally expressed as the values of the sequence of tones, as indicated in (4) above. Given that we know the value of the prominence tone, we can predict the value of the preceding lexical tone (in accent 2) and the following boundary tone.

The table in (6) expresses the general shape of the contour, however it is distributed over individual words of different size and morphological constitution. Thus, this table gives no indication about where in the word the prominence tone is realized, nor exactly where in the primary stressed syllable the lexical tone is associated. There is a timing difference in this regard, e.g. among the dialects in the third group (South Swedish vs. Dala, cf. BRUCE & GÅRDING 1978).

Some areas have lost the accent distinction, and these are of two types. The typical accentless area has lost the marked member of the opposition (accent 2), usually due to the influence of other languages (Finnish, Sami, Low German). Some areas have generalized the accent 2 melody to all contexts where a stressed syllable is followed by a posttonic



relating to whether or not the prominence tone can spread. If not, there is simple interpolation.

In the description, I shall assume that only the lexical and prominence tones associate to tone-bearing units (stressed syllables), while boundary tones will be assumed to align rather than associate with their boundary. This is likely to be a simplification, but will not seriously affect the predictions of the account given.

To further delimit the typological ramifications it might be worth mentioning some phonological notions, that have been proposed, but which are left out of this analysis. As mentioned, there will be no association to unstressed syllables or to moras, nor will I assume any alignment to edges other than that of the focal prosodic phrase. Also, there are no assumptions of tone deletion, epenthetic tone insertion, tone coalescence or tonal flop (polarity change). These are all far too controversial and theory-dependent notions to be included in the typology at the current state of knowledge.

### 2.2.1. Association of the prominence tone

The first notion we look at is the association of the prominence tone (yes/no), and we will illustrate this contrast as in (7) below, with a stylized contour as well as an autosegmental representation. The autosegmental representation illustrates what the phonological interpretation of the contour is, viz. which tones are associated where (vertical line) and whether a tone spreads (arrow) or not (broken line, interpolation). For practical purposes, I shall use the Swedish word *sommarledigheten* ‘the summer vacation’ throughout and for all dialects, even though it is not idiomatic for Norwegian. This word contains three stressed syllables ( ${}^1\sigma \sigma\text{-} {}_1\sigma \sigma\text{-} {}_1\sigma \sigma$ ) and provides a clear distance between the primary stress and the right edge of the word, where we can study the sensitivity to prefinal stress.

Stockholm (Central Swedish, CSw) has an associated prominence tone, while Stavanger (Southwestern Norwegian, SWNw) does not.

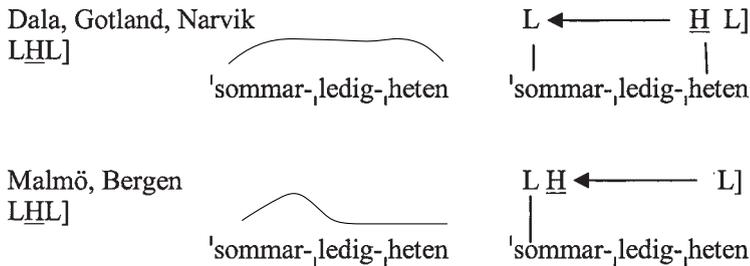
#### (7) Association of prominence tone: Stockholm (yes), Stavanger (no)

Dialect	Stylized contour	Autosegmental representation
Stockholm HLHL]		H ← LHL]     'sommar- <sub>1</sub> ledig- <sub>1</sub> heten
Stavanger HLHL]		HLH ----- L]     'sommar- <sub>1</sub> ledig- <sub>1</sub> heten

In Stockholm, as in all dialects of CSw, the prominence tone LH associates to the last stressed syllable and the L part spreads to the left. In Stavanger, representing a probably rather small (and under-researched) area, the melody is the same as in CSw, but occurs in sequence in the initial part of the word. This indicates that the prominence tone is not associated, and there is interpolation to the L] boundary tone.

The dialects of Dala (in the middle of Sweden), Gotland (the island in the Baltic) and Narvik (North Norwegian, NNw) have a different tonal make-up as we have seen, but exhibit the same contrast with respect to the association of tones.

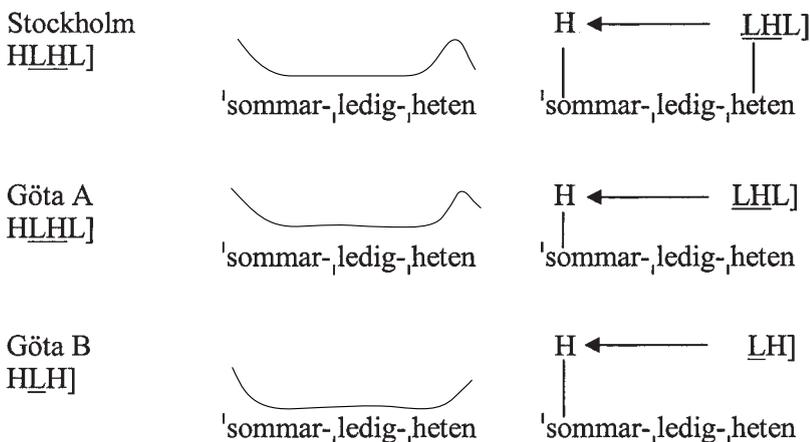
(8) Association of prominence tone: Dala (yes), Malmö (no)



In the Dala/Gotland/Narvik system, the prominence H tone is associated to the last stress, as in CSw, and it spreads to the left yielding a high plateau. In Malmö (South Swedish, SSw) and in Bergen (West Norwegian, WNw) the same melody occurs in the beginning of the word. In Malmö and Bergen the subsequent fall is rather steep, a fact that would seem to indicate that the boundary tone spreads leftward. This introduces a new variable into the typology, but the implications of this will not be pursued here.<sup>6</sup>

A third example of the contrast between associated and floating prominence tone occurs in the comparison of Stockholm (CSw) and Göta, the large area south of the CSw area but north of the SSw area. The value of the final boundary tone in the Göta variety is unclear. More research is needed, but it appears to be either or both of the two variants given below (KURONEN 1999, BRUCE & GÅRDING 1978), possibly with different regional distribution.

(9) Association of prominence tone: Stockholm (yes), Göta (no)



<sup>6</sup> I thank GÖSTA BRUCE for pointing this out to me.

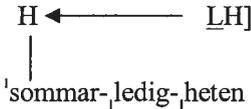
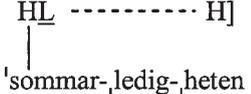
The characteristic feature of the Göta varieties is that the final rise occurs on the last syllable, irrespective of that syllable's stress status. The prominence tone is thus unassociated in this dialect type, but unlike the Stavanger and Dala types, it stays at the right edge of the word and spreads leftward from there. This contrast illustrates the need for a phonological distinction in terms of alignment, to which we now turn.

### 2.2.2. Alignment of the prominence tone

The alignment of the prominence tone expresses where in the word the prominence tone occurs. Alignment also instantiates tone spreading, provided the dialect allows it. The dialect types in (9) illustrate the case where spreading is allowed and the prominence tone is doubly aligned, both to the right and to the left. In the CSw system the prominence tone goes no further to the right than the last stress since association overrides alignment. However, the very fact that it is the last stress rather than some other stress in the structure that the prominence tone associates to, is due to the right-alignment. Thus, both alignment and association are accommodated as far as possible. This is naturally expressed in a constraint grammar like optimality theory (PRINCE & SMOLENSKY 1993, cf. RIAD 1998b for an analysis in this model).

If a dialect does not allow tones to spread, then double right- and left-alignment can not be instantiated and the prominence tone will align either to the right or the left. The contrast between, on the one hand, double alignment, and, on the other hand, left alignment only has in fact already been illustrated, in (7) and (8) above. Another contrast of the same kind occurs in the comparison of two minimally different dialects which have unassociated prominence tones, namely Göta B and Oslo, the latter representing the East Norwegian (ENw) variety.

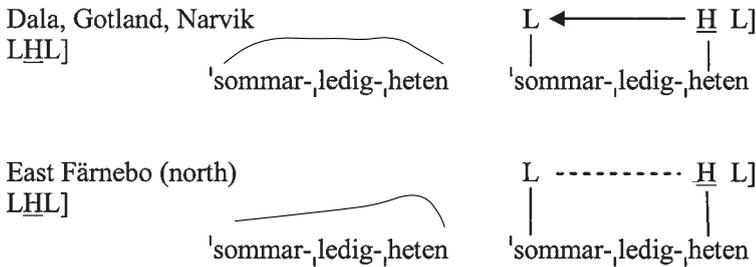
#### (10) Alignment of prominence tone: Göta B (left and right), Oslo (left)

Dialect	Stylized contour	Autosegmental representation
Göta B HLH]	 'somm̩ar- ledig- het̩en	$\text{H} \longleftarrow \text{LH}]$  'somm̩ar- ledig- het̩en
Oslo HLH]	 'somm̩ar- ledig- het̩en	$\text{HL} \text{-----} \text{H}]$  'somm̩ar- ledig- het̩en

The Oslo (ENw) dialect type exhibits a rising contour beginning directly after the prominence L tone, which then often rises sharply right at the end. The boundary H] carries the focal function in this dialect and can be extremely high (KRISTOFFERSEN 2000: 281 fn.), depending on the length of the focal phrase and the emphasis given. Such a long rise is naturally interpreted as a case of interpolation.

Let us now turn to the opposite case, where the right-alignment of the prominence tone predominates. This interpretation is warranted in the cases where the prominence tone occurs to the right and there is interpolation between the lexical tone and the prominence tone. The dialects of this type that I have found, invariably have an associated prominence tone, possibly a prerequisite for this type of contour to occur. We look first at the contrast between the Dala/Gotland/Narvik type and the dialect of East Färnebo (north). East Färnebo is a small dialect area located directly to the south-west of the Dala area. It borders on the Göta area.<sup>7</sup>

(11) Alignment of prominence tone: Dala (left and right), East Färnebo north (right)



The phonetic difference between the contours lies in the initial pitch rise, which is sharp in the Dala/Gotland/Narvik type, and much more flat in East Färnebo (north). The interpolation from the lexical tone to the prominence tone is thus quite clear and the phonological interpretation is that right-alignment of the prominence tone rules in this dialect. The East Färnebo dialects were described by KALLSTENIUS (1902) and the northern variety also occurs in the audio material on the SWEDIA 2000 home page (see references).

There are other dialects which seem to illustrate the same tonal state of affairs. A typical feature that goes together with the right-alignment is the perception of main stress on the syllable to which the prominence tone is associated. I shall refer to this as the “right-hand prominence” pattern. The normal state of affairs is for the first stress to be perceived as carrying primary stress. Right-hand prominence in compounds is a wide-spread phenomenon in Scandinavia, and it is traditionally described in terms of stress rather than tone.<sup>8</sup> It would seem more plausible, however, that it is the tonal structure which is the primary source of this perception, and that nothing needs to change in the stress structure. Subsequent adjustments at the stress level are however possible (but secondary), such as quantity reduction of the (former) initial primary stress and rhythmic adjustments. Typically, the right-hand prominence pattern is not general, but both sociolinguistically stratified (BRUCE 1982) and phonologically favoured in contexts where the first stress is on

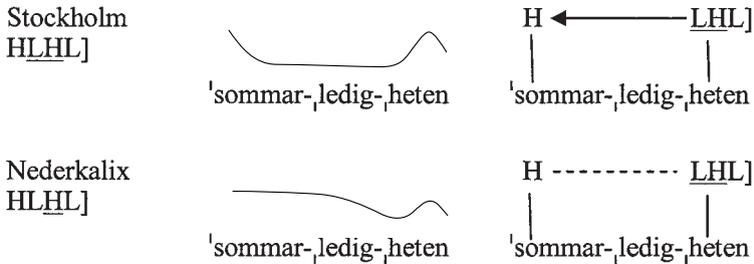
<sup>7</sup> In fact, the southern variety of East Färnebo is of the Göta type (KALLSTENIUS 1902).

<sup>8</sup> SELENIUS (1972: 202 ff.) reports that at least the following Swedish-speaking areas have right-hand prominence: (north) Lappland, Norrbotten, Västerbotten, Ångermanland, East Jämtland, Medelpad, (central) Uppland, Sörmland, (west) Värmland, Västergötland, Bohuslän, (south) Halland, Skåne, Blekinge, (east) Gotland, West Nyland (in Finland). No doubt, the pattern occurs also in Norwegian dialects (e.g. Sunnmøre, ABRAHAMSEN 2003).

the very first syllable (e.g. Sunnmøre, WNw, ABRAHAMSEN 2003), and the stresses are not adjacent (e.g. Norrbotten, NSw, BRUCE 1982). Invariably, the right-hand prominence pattern occurs in words that would otherwise have accent 2, and it is always perceived as accent 1. This means that there is an unequivocal connection between accent 2 and resultant right-hand prominence.

Consider now the minimal pair of Stockholm and Nederkalix (in Norrbotten in northern Sweden; RUTBERG 1924). Nederkalix is a dialect of the CSw type (like Stockholm) and the comparison made here is between a left-hand prominence pronunciation (represented by Stockholm) and a right-hand prominence pronunciation (represented by Nederkalix). These examples correspond closely to those given in (11) above, but the values of the tones are different.

- (12) Alignment of prominence tone: Stockholm (left and right), Nederkalix (right)



The essential difference between the contours here is that the initial sharp pitch fall of Stockholm is absent in the Nederkalix pronunciation. Again, it is reasonable to interpret this difference phonologically as one between leftward spreading of the prominence tone (instantiated by left-alignment) and no spreading. Pronunciations verifying the Nederkalix contour occur in the SWEDIA audio files, e.g. in Nederkalix and Ångermanland (a shire further to the south along the coast).

The common property, then, of East Färnebo (north) and Nederkalix is the slacker contour in conjunction with the lexical tone. GÖSTA BRUCE (p.c.), who has also observed this, suggests that the absence of a sharp contour may cause the lexical tone to be less saliently perceived, which in turn might favour the perception of higher degree of prominence on the part of the prominence tone. If this and our phonological interpretation of it are true, we have an explanation here for three things. 1. The loss of left-alignment would explain the slackening of the pitch contour. 2. The fact that this only happens in accent 2 words would follow from the fact that those words, unlike accent 1, have an initial extra tone to which the prominence tone may spread. Thus, it is only in accent 2 words that there is a sharp rising or falling initial contour to start with, which can then undergo slackening and cause right-hand prominence. 3. The fact that the right-hand prominence pattern invariably is considered as accent 1 follows from the fact that it is the part of the contour which is common to accent 1 and 2 which is highlighted as the lexical initial part moves into the shadows.

### 2.3. Conclusions for the main typology

This concludes the discussion of the general, phonological patterns that instantiate the tonal typology in Scandinavia. We have seen that, descriptively, three parameters relating to tonal properties may vary independently and thus generate the different types observed. We saw first that the melodic value of tones may vary. Since the Scandinavian tonal area appears to generally obey the OCP, there are limitations of which values may be combined (if the prominence tone is  $\underline{H}$ , the lexical tone must be L, etc.). The second parameter relates to the association of the prominence tone. This instantiates a major isogloss [cf. the map in (5) above] that cuts through the Scandinavian peninsula in an independent manner. The third parameter relates to the alignment properties of the prominence tone, where the three logical possibilities were all seen to exist. Thus, CSw, Göta, Dala, Gotland and Narvik represent the case where the prominence tone is doubly aligned (left and right), and Oslo (ENw), Stavanger, Bergen (WNw) and South Swedish represent the case where the prominence tone is left-aligned only. East Färnebo (north) and the patterns found in Nederkalix and Ångermanland, finally, represent the case where the prominence tone is right-aligned only. For this last phonological type, we have dialects which exhibit the regular left-hand prominence [East Färnebo (north)] and dialects which exhibit at least perceived right-hand prominence (Nederkalix, Ångermanland).

## 3. Subtypologies

Having discussed the chief prosodic properties of the typology, we turn now to a few other typological aspects of Scandinavian accent. I will focus on a range of phenomena that can be subsumed under the heading of morphology. First, I shall mention the sensitivity to the morphological make-up of compounds which seems to interfere with prosodic concerns in the realization of tone accent 2 (section 3.1). Thereafter, we shall take a look at the subtypology of accent assignment in compounds, where morphological and lexical factors, on the one hand, interact with prosodic factors, on the other (section 3.2).

### 3.1 Morphological sensitivity

In most Germanic dialects, binary compounds get primary stress on the first element, and secondary stress on the other elements (English  ${}^1\text{evening } {}_1\text{class}$ ,  ${}^1\text{towel } {}_1\text{rack}$ ; German  ${}^1\text{Schlafan}_1\text{züge}$  ‘pyjamas’, Danish  ${}^1\text{sol}_1\text{sort}$  ‘blackbird’). There is often a difference of stress degree between elements in longer compounds (omitted here). In some structures, e.g. English compounds with a left-branching compound element ([[ ${}^1\text{kitchen } {}_1\text{towel}$ ]  ${}_1\text{rack}$ ], [[ ${}^1\text{law } {}_1\text{school}$ ] [ ${}^1\text{language } {}_1\text{exam}$ ]]), primary stress goes to the pre-final element. In the case at hand, the prominence of secondary stress can be used to signal the structure of the compound. Thus, the first of the secondary prominences is relatively strong in  ${}^1\text{law } {}_1\text{school } {}^1\text{language } {}_1\text{exam}$ .

In the Scandinavian languages, the primary stress is on the initial element, as a rule.<sup>9</sup> As in English, secondary stress is phonologically present on the other elements with root

<sup>9</sup> The chief type of exception are the tonal dialects which have right-alignment of the prominence tone, discussed above.

status in the compound. However, there are a number of different contexts to discern regarding which of the secondary stresses it is that is going to be the relatively most prominent, and in some of these, morphology is relevant.

In dialects of the CSw and Dala types the last stressed syllable is going to be most prominent among secondary stresses, by virtue of the associated prominence tone. In these dialects, secondary stress is not used for morphological purposes. In Snappertuna, however, a dialect otherwise essentially belonging to the CSw system, the prominence tone may move to another syllable than the last stressed one, if this is motivated by the morphology. The following examples are taken from SELENIUS (1972: 124ff.), and show the variation between the regular prosodic pattern and the morphologically motivated pattern. The location of the prominence tone is marked with a 'H'. That secondary stress will be more prominent than the other one.

(13) Snappertuna compounds

<b>morphological pattern</b>	<b>prosodic pattern</b>	
<sup>1</sup> pingst-[ <sup>H</sup> ander- <sub>1</sub> dagen]	<sup>1</sup> pingst-[ <sub>1</sub> ander- <sup>H</sup> <sub>1</sub> dagen]	'Whit-Monday'
<sup>1</sup> ugns-[ <sup>H</sup> pann- <sub>1</sub> kaka]	<sup>1</sup> ugns-[ <sub>1</sub> pann- <sup>H</sup> <sub>1</sub> kaka]	'ovenbaked pancake'
<sup>1</sup> vår-[ <sup>H</sup> skrift- <sub>1</sub> skolan]	<sup>1</sup> vår-[ <sub>1</sub> skrift- <sup>H</sup> <sub>1</sub> skolan]	'spring writing school'

The square brackets indicate which elements belong together, and as we can see, the secondary stress vacillates between the prosodic and the morphological pattern. In other Swedish dialects of Finland, where there is no tone accent distinction, secondary stress tends to signal morphological structure. The same holds for Danish, though Danish also has some movement of **primary** stress in forms like (<sub>1</sub>)*stats*[<sup>1</sup>*bolig*-<sub>1</sub>*fonden*] 'state dwelling trust', (<sub>1</sub>)*kalve*-[<sup>1</sup>*nyre*-<sub>1</sub>*steg*] 'veal kidney steak'.

In Sunnmøre, a dialect which often has right-hand prominence in compounds, the prominence tone may adjust to a morphological boundary in two interesting ways. The contrasts in (14) below are reported in ABRAHAMSEN (2003: 193ff.). His interpretation of the alternations is that not only the prominence tone, but also primary stress, shifts location. As with the Nederkalix example in (12) above, we shall assume that it is only the prominence tone (H in Sunnmøre) which moves. The illustration of morphological sensitivity as such is not affected by this. All examples are cases of accent 2.<sup>10</sup>

(14) Sunnmøre morphological sensitivity

(14a) <sup>1</sup> dame-[ <sup>H</sup> hår- <sub>1</sub> pynt]	'hair adornment for women'
[ <sup>1</sup> dame- <sub>1</sub> hår]- <sup>H</sup> <sub>1</sub> pynt	'adornment made of women's hair'
<sup>1</sup> herre-[ <sup>H</sup> pels- <sub>1</sub> huve]	'fur hat for men'
[ <sup>1</sup> herre- <sub>1</sub> pels]- <sup>H</sup> <sub>1</sub> huve	'hat made of man fur'
(14b) <sup>1</sup> hage- <sup>H</sup> para <sub>1</sub> sollen	'the garden parasol'
<sup>1</sup> herre- <sup>H</sup> katama <sub>1</sub> ranar	'catamarans for men'

The compounds in (14a) consist of three elements, where the middle element can be semantically grouped with either the first or the last element, as marked by the brackets. The secondary stress picked out by the prominence tone signals what the structure is. The compounds in (14b) exhibit morphological sensitivity in a rather exotic fashion. The iso-

<sup>10</sup> This dialect also has accent 1 in compounds, cf. the isogloss on the map in (5).

lated pronunciation of the second elements are *para*<sup>1</sup>*sollen* and *katama*<sup>1</sup>*ranar*, with stress on the penultimate syllable (the final syllable of the stem). However, when these words occur as second element in a compound, the prominence tone occurs on the first syllable of the second element, even though this is an (otherwise) unstressed syllable. The effect is, nevertheless, the perception of stress on that syllable.

### 3.2. *Lexical sensitivity*

The isogloss drawn with a broken line on the map in (5) marks the major boundary between dialects which have general accent 2 in compounds by virtue of post-lexical accent assignment, and those which allow both accents in compounds. In the latter type of dialect, all of which have left-alignment only of the prominence tone, accent is determined by the interaction of lexical and prosodic information. Within this group of dialects, the accent patterns vary and give rise to a subtypology, which is as yet not sufficiently studied. There are, however, two important studies that cast light on the patterns, namely KRISTOFFERSEN (1992) and BRUCE (1974).

KRISTOFFERSEN (1992) investigates East Norwegian and proposes a fully lexical explanation for the occurrences of accent 2 in compounds (accent 1 being the default).<sup>11</sup> The lexical information is located in the first element or as a linking element directly after the first element. Other lexical tonal information is inert. The lexical tone in East Norwegian is H, the prominence tone is L.

#### (15) East Norwegian compounds (KRISTOFFERSEN 1992)

<b>input</b>		<b>compound</b>	<b>accent</b>	<b>gloss</b>
<sup>H</sup> sommer-Ø + <sup>1</sup> sko	>	<sup>H</sup> sommer- <sub>1</sub> sko	2	'summer shoe'
<sup>H</sup> glede-s + <sup>1</sup> rus	>	<sup>H</sup> glede-s- <sub>1</sub> rus	2	'elation'
<sup>1</sup> sans-e <sup>H</sup> + <sup>1</sup> brand	>	<sup>H</sup> sans-e- <sub>1</sub> brand	2	'mind fire'
<sup>1</sup> kveld- <sup>H</sup> -s + <sup>1</sup> mat	>	<sup>H</sup> kveld-s- <sub>1</sub> mat	2	'evening meal'
<sup>1</sup> hassel- <sup>H</sup> + <sup>1</sup> nøtt	>	<sup>H</sup> hassel- <sub>1</sub> nøtt	2	'hazel nut'
<sup>1</sup> lys- <sup>H</sup> + <sup>1</sup> fest	>	<sup>H</sup> lys- <sub>1</sub> fest	2	'light party'
<sup>1</sup> fest-Ø + <sup>1</sup> lys	>	<sup>L</sup> fest- <sub>1</sub> lys	1	'party light'
<sup>1</sup> verden-s + <sup>1</sup> del	>	<sup>L</sup> verden-s- <sub>1</sub> del	1	'continent'
<sup>1</sup> dåp-s + <sup>H</sup> handling	>	<sup>L</sup> dåp-s- <sub>1</sub> handling	1	'act of baptising'
<sup>1</sup> taxi + <sup>1</sup> bil	>	<sup>L</sup> taxi- <sub>1</sub> bil	1	'taxi car'
<sup>1</sup> taxi + <sup>H</sup> säte	>	<sup>L</sup> taxi- <sub>1</sub> säte	1	'taxi seat'

As indicated, the linking element, when present, can consist of segmental content only (-s-), tonal content only (-<sup>H</sup>-), or indeed a combination of the two (-e<sup>H</sup>-). According to this analysis, accent 1 results by default unless there is lexical tonal information within the first two morphemes of the compound. Prosodic factors relating to stress are of no importance.

BRUCE (1973, 1974) provides a typology for compound accent in some South Swedish varieties. We shall look here at the pattern in Malmö, restating the insights of BRUCE (1974). BRUCE used nonsense compounds in his investigation, and they have been replaced here by extant compounds. The lexical tone is L, the prominence tone is H.

<sup>11</sup> The article is a response to the previous studies of this East Norwegian pattern by WITHGOTT & HALVORSEN (1984, 1988).

## (16) South Swedish compounds: Malmö (BRUCE 1974)

input		compound	accent	gloss
<sup>L</sup> sommar + <sup>l</sup> lov	>	<sup>L</sup> sommar- <sub>1</sub> lov	2	'summer vacation'
<sup>l</sup> blod + <sup>l</sup> fläck	>	<sup>L</sup> blod- <sub>1</sub> fläck	2	'blood stain'
[ <sup>l</sup> mask + <sup>l</sup> ros] + <sup>l</sup> blad	>	<sup>L</sup> mask- <sub>1</sub> ros- <sub>1</sub> blad	2	'dandelion leaf'
<sup>l</sup> guld + [ <sup>l</sup> arm + <sup>l</sup> band]	>	<sup>L</sup> <sup>H</sup> guld- <sub>1</sub> arm- <sub>1</sub> band	2/1	'gold bracelet'
<sup>l</sup> cykel + <sup>l</sup> ställ	>	<sup>L</sup> <sup>H</sup> cykel- <sub>1</sub> ställ	2/1	'bicycle stand'
<sup>l</sup> mjölk + cho <sup>l</sup> klad	>	<sup>H</sup> mjölk-cho <sub>1</sub> klad	1	'milk chocolate'
ba <sup>l</sup> nan + <sup>l</sup> skal	>	<sup>H</sup> ba <sup>l</sup> nan- <sub>1</sub> skal	1	'banana peel'
<sup>l</sup> om + <sup>l</sup> tyckt	>	<sup>H</sup> om- <sub>1</sub> tyckt	1	'well liked'
<sup>l</sup> skog-s + <sup>l</sup> tall	>	<sup>H</sup> skog-s- <sub>1</sub> tall	1	'forest pine'
<sup>l</sup> taxi + <sup>l</sup> bil	>	<sup>H</sup> taxi- <sub>1</sub> bil	1	'taxi car'

If there is a lexical tone in the first element of the compound, then the result is invariably accent 2 (<sup>L</sup>*sommar-<sub>1</sub>lov*). The prosodically most stable context for accent 2 is stress clash (<sup>L</sup>*blod-fläck*, contrasting with <sup>H</sup>*mjölk-cho<sub>1</sub>klad*, <sup>H</sup>*taxi-bil*), but there are some limiting conditions. If the first stress is not initial, accent 2 is blocked (<sup>H</sup>*ba<sup>l</sup>nan-<sub>1</sub>skal*). Likewise if there is a linking-*s* between the clashing syllables (<sup>H</sup>*skog-s-<sub>1</sub>tall*). The role of the linking elements is otherwise not prominent in this analysis. The morphological composition plays a role in forms with three compound elements. If the first two belong closely together, accent 2 results (<sup>L</sup>*mask<sub>1</sub>ros-<sub>1</sub>blad*), while if the last two belong closely together, accent is variable in BRUCE's data (<sup>L</sup><sup>H</sup>*guld-<sub>1</sub>arm<sub>1</sub>band*). There is also variation in compounds where the first element ends in *-el*, *-er* or *-en* (<sup>L</sup><sup>H</sup>*cykel-<sub>1</sub>ställ*). The vowel here is unstable (e.g. pl *cyk•l-ar* 'bicycles') and words from this group may have different accents already in simplex form, in singular (<sup>L</sup>*spegel* 'mirror', <sup>L</sup>*regel* 'bolt' vs. <sup>H</sup>*toffel* 'slipper', <sup>H</sup>*lämmel* 'lemming'), and in plural (<sup>L</sup>*gafflar* 'forks', <sup>L</sup>*svågrar* 'brothers-in-law' vs. <sup>H</sup>*fingrar* 'fingers', <sup>H</sup>*fräknar* 'freckles'), cf. DELSING & HOLM (1988). Also, compound participials get accent 1 (<sup>H</sup>*om-<sub>1</sub>tyckt*). These are formed from so-called particle verbs (*tycka om* 'like', *klä av* 'undress'), which, according to JOSEFSSON (1997: 139ff.), have a different internal structure from other compounds (incorporation vs. merger).

BRUCE goes on to show that there are both similarities and differences from Malmö in Kristanstad and Halmstad, which to an increasing degree have generalized the influence of prosodic factors on accent assignment in compounds.<sup>12</sup>

#### 4. Conclusion

In this article, we have looked at the primary, typological parameters concerning the melody and the prosodic grammar of Scandinavian tone accent. We have also briefly looked at the influence of morphological factors on accent assignment, a matter that requires more research. It seems clear, however, that morphology does not form a major influence on the general pattern, but rather belongs to the subtypologies.

Several issues have not been discussed here. For instance, there are a number of things to study concerning the historical development of the typology. In order to approach that issue one needs to build on a hypothesis of the origin of tonal accent, so that directions of

<sup>12</sup> For a fuller analysis, cf. the original articles and RIAD (2003) where some implications for diachrony are discussed.

development from an original type can be considered. Literature discussing this issue include OFTEDAL (1952), ÖHMAN (1967), ELSTAD (1980), GÅRDING (1977), LIBERMAN (1982), D'ALQUEN & BROWN (1992) and RIAD (1998a, 2005). Another relevant issue concerns the relationship between the tonal systems and the *stød* system of Danish. Some points regarding this are made in FISCHER-JØRGENSEN (1989b) and RINGGAARD (1983), while KRISTENSEN (1898), LIBERMAN (1982), RISCHER (2001) and RIAD (2000a/b) offer specific proposals regarding the historical relationship.

## References

- ABRAHAMSEN, JARDAR EGGESBØ (2003): *Ein vestnorsk intonasjonsfonologi*. Dr. art. diss. Institutt for språk- og kommunikasjonstudium. Noregs teknisk-naturvitenskaplege universitet.
- BASBØLL, HANS (1985): *Stød in Modern Danish*, in: *Folia Linguistica* XIX.1–2, 1–50.
- BASBØLL, HANS (1998): *Nyt om stødet i moderne rigsdansk – om samspillet mellem lydstruktur, ordgrammatik og kognitive principper*, in: *Pluridicta* 35. Institut for Sprog og Kommunikation, Odense University.
- BASBØLL, HANS (2003): *Prosody, productivity and word structure: the stød pattern of Modern Danish*, in: *Nordic Journal of Linguistics* 26.1, 5–44.
- BLOCH, JOSEFIN (2003): *Generaliserad accent 2 i Uppland ur ett fonologiskt perspektiv*, in: RIAD, TOMAS (ed.), *Tre artiklar om generaliserad accent 2 i Östra Svealand*. (MINS 54). Stockholm universitet: Institutionen för nordiska språk, 37–61.
- BRUCE, GÖSTA (1973): *Tonal accent rules for compound stressed words in the Malmö dialect*, in: *Working papers* 7, Lund University: Phonetics laboratory.
- BRUCE, GÖSTA (1974): *Tonaccentregler för sammansatta ord i några sydsvenska stadsmål*, in: PLATZACK, CHRISTER (ed.), *Svenskans beskrivning* 8. Lund: Institutionen för nordiska språk, Lunds universitet, 62–75.
- BRUCE, GÖSTA (1977): *Swedish word accents in sentence perspective*. (Travaux de l'institut de linguistique de Lund 12). Lund: CWK Gleerup.
- BRUCE, GÖSTA (1982): *Reglerna för slutledsbetonning i sammansatta ord i nordsvenskan*, in: ELERT, CLAES-CHRISTIAN & FRIES, SIGURD (eds.), *Nordsvenska*. Umeå: University of Umeå.
- BRUCE, GÖSTA & GÅRDING, EVA (1978): *A prosodic typology for Swedish dialects*, in: GÅRDING et al. (eds.), 219–228.
- BRUCE, GÖSTA & HERMANS, BEN (1999): *Word tone in Germanic languages*, in: VAN DER HULST, HARRY (ed.), *Word prosodic systems in the languages of Europe*. Berlin: Mouton de Gruyter, 605–658.
- D'ALQUEN, RICHARD & BROWN, KEVIN (1992): *The origin of Scandinavian accents I and II*, in: RAUCH, IRMENGARD, CARR, GERALD & KYES, ROBERT (eds.), *On Germanic linguistics: Issues and methods*. Berlin: Mouton de Gruyter, 61–79.
- DELSING, LARS-OLOF & HOLM, LISA (1988): *Om akut accent i skånskan*, in: *Sagt och skrivet*. (Festskrift till DAVID KORNHALL). Lunds universitet: Institutionen för nordiska språk.
- ELSTAD, KÅRE (1980): *Some remarks on Scandinavian tonogenesis*, in: *Nordlyd: Tromsø University Working Papers on Language & Linguistics* 3, 62–77. (Repr. in JAHR, ERNST HÅKON & LORENTZ, OVE 1983, 388–398.)
- ENGSTRAND, OLLE (1997): *Phonetic interpretation of the word accent contrast in Swedish: Evidence from spontaneous speech*, in: *Phonetica* 54, 61–75.
- FINTOFT, KNUT (1970): *Acoustical analysis and perception of tonemes in some Norwegian dialects*. Oslo: Universitetsforlaget.
- FINTOFT, KNUT; MIAAVATN, PER EGIL; MØLLERGÅRD, EINAR & ULSETH, BRIT (1978): *Toneme patterns in Norwegian dialects*, in: GÅRDING et al. (eds.), 197–206.
- FISCHER-JØRGENSEN, ELI (1989a): *A phonetic study of the stød in Standard Danish*. University of Turku. (revised version of ARIPUC 21, 56–265).
- FISCHER-JØRGENSEN, ELI (1989b): *Phonetic analysis of the stød in Standard Danish*, in: *Phonetica* 46, 1–59.
- FRETHEIM, THORSTEIN & NILSEN, RANDI A. (1989): *Terminal rise and rise-fall tunes in east Norwegian intonation*, in: *Nordic journal of linguistics* 12, 155–181.

- GUSSENHOVEN, CARLOS & BRUCE, GÖSTA (1999): Word prosody and intonation, in: VAN DER HULST, HARRY (ed.), *Word prosodic systems in the languages of Europe*. Berlin: Mouton de Gruyter, 233–271.
- GÅRDING, EVA (1975): Toward a prosodic typology for Swedish dialects, in: DAHLSTEDT, KARL-HAMPUS (ed.), *The Nordic languages and modern linguistics 2*. Stockholm: Almqvist & Wiksell International, 466–474.
- GÅRDING, EVA (1977): *The Scandinavian word accents*. (Travaux de l'institut de linguistique de Lund 11). Lund: CWK Gleerup.
- GÅRDING, EVA; BRUCE, GÖSTA & BANNERT, ROBERT (eds.) (1978): *Nordic prosody. Papers from a symposium*. (Travaux de l'institut de linguistique de Lund 13). Lund: Lund University.
- GÅRDING, EVA; BRUCE, GÖSTA & WILLSTEDT, URSULA (1978): Transitional forms and their position in a prosodic typology for Swedish dialects, in: GÅRDING et al. (eds.), 197–206.
- HANSEN, AAGE (1943): *Stødet i dansk*. (Det kgl. Videnskabernes Selskab. Historisk-filologiske Meddelelser, XXIX.5). København: Einar Munksgaard.
- HAUDRICOURT, ANDRÉ-GEORGES (1954): De l'origine des tons en Vietnamien, in: *Journal Asiatique* 242, 69–82.
- HAUGEN, EINAR (1967): On the rules of Norwegian tonality, in: *Language* 43, 185–202.
- HAUGEN, EINAR & JOOS, MARTIN (1952): Tone and Intonation in east Norwegian, in: *Acta Philologica Scandinavica* 22, 41–64. (Repr. in JAHR, ERNST HÅKON & LORENTZ, OVE 1983. 178–202.)
- ITÔ, JUNKO & MESTER, ARMIN (1997): *Stødet i dansk*. Handout, Hvalfjarðarströnd, Iceland.
- JAHR, ERNST HÅKON & LORENTZ, OVE (eds.) (1983): *Prosodi/Prosody*. (Studies in Norwegian Linguistics 2). Oslo: Novus.
- JOSEFSSON, GUNLÖG (1997): *On the principles of word formation in Swedish*. (Lundastudier i nordisk språkvetenskap A 51.). Lund: Lund University press.
- KÄLLSKOG, MARGARETA; EKLUND, GERD; DANIELSSON, BO; HAGREN, KRISTINA; WESTERBERG, ANNA; VÅSTERLUND, RUNE & REINHAMMAR, MAJ (1993): *Uppländska* (Uppland dialect: Publications of the institute of dialect and folklore research, Uppsala. Ser. A:22). Uppsala: Almqvist & Wiksell.
- KALLSTENIUS, GOTTFRID (1902): *Värmländska Bäragslagsmålets ljudlära*. Stockholm: Norstedt & Söner.
- KLINTBERG, MATHIAS (1885): *Laumålets kvantitet ock aksent*. (Svenska landsmål ock svenskt folklif VI.1). Stockholm: Norstedt & Söner.
- KRISTENSEN, MARIUS (1898): *Stødet i dansk*, in: *Arkiv för nordisk filologi* 15, 41–67
- KRISTOFFERSEN, GJERT (1992): Tonelag i sammensatte ord i østnorsk, in: *Norsk lingvistisk tidsskrift* 10, 39–65.
- KRISTOFFERSEN, GJERT (1993): An autosegmental analysis of East Norwegian pitch accent, in: GRANSTRÖM, BJÖRN & NORD, LENNART (eds.), *Nordic prosody* 6. Stockholm: Almqvist & Wiksell International, 109–122.
- KRISTOFFERSEN, GJERT (2000): *The phonology of Norwegian*. (The phonology of the world's languages). Oxford: Oxford University Press.
- KURONEN, MIKKO (1999): Prosodiska särdrag i göteborgska, in: *Svenskans beskrivning* 23. Lund: Lund University Press, 188–96.
- LARSSON, NILS (2003): Några förändringar i dialekten i Trögds härad under 1900-talet, in: RIAD, TOMAS (ed.), *Tre artiklar om generaliserad accent 2 i Östra Svealand*. (MINS 54). Stockholm universitet: Institutionen för nordiska språk, 17–35.
- LEBEN, WILLIAM (1973): *Suprasegmental phonology*. Diss. MIT.
- LIBERMAN, ANATOLY (1982): *Germanic accentology*. Vol. I: *The Scandinavian languages*. Minneapolis: University of Minnesota Press.
- LORENTZ, OVE (1995): Tonal prominence and alignment, in: *Phonology at Santa Cruz* 4, 39–56.
- MEYER, ERNST A. (1937): *Die Intonation im Schwedischen I. Die Sveamundarten*. Helsingfors: Fritzes bokförlags AB, Mercators tryckeri.
- MEYER, ERNST A. (1954): *Die Intonation im Schwedischen II. Die norrländischen Mundarten* (Stockholm studies in Scandinavian Philology 11). Uppsala: Almqvist & Wiksell.
- MJAAVATN, PER EGIL (1978): Isoglosses of toneme categories compared with isoglosses of traditional dialect geography, in: GÅRDING et al. (eds.), 207–216.
- NILSEN, RANDI A. (1992): *Intonasjon i interaksjon. Sentrale spørsmål i norsk intonologi*. Diss. Department of linguistics, University of Trondheim.
- NYSTRÖM, STAFFAN (1997): Grav accent i östra Svealands folksmål, in: REINHAMMAR, MAJ (ed.), *Nordiska*

- dialektstudier*. Uppsala: Språk- och folkminnesinstitutet, 215–222. [Reprinted in: RIAD, TOMAS (ed.) *Tre artiklar om generaliserad accent 2 i Östra Svealand*, MINS 54, 7–15.]
- ÖHMAN, SVEN (1967): Word and sentence intonation: A quantitative model, in: *Speech Transmission Laboratory Quarterly Progress and Status Report (STL-QPSR)* 2–3, 20–54. Dept. of Speech Transmission, Royal Institute of Technology, Stockholm.
- OFTEDAL, MAGNE (1952): On the origin of the Scandinavian tone distinction, in: *Norsk tidsskrift for sprogvidenskap* 16, 201–225. [Reprinted in: JAHR, ERNST HÅKON & LORENTZ, OVE eds. 1983. 154–177.]
- PRINCE, ALAN & SMOLENSKY, PAUL (1993): *Optimality theory: Constraint interaction in generative grammar*. Ms, Rutgers University and University of Colorado, Boulder.
- RIAD, TOMAS (1998a): The origin of Scandinavian tone accents, in: *Diachronica* XV.1, 63–98.
- RIAD, TOMAS (1998b): Towards a Scandinavian accent typology, in: KEHREIN, WOLFGANG & WIESE, RICHARD (eds.), *Phonology and morphology of the Germanic languages*. (Linguistische Arbeiten 386). Tübingen: Niemeyer, 77–109.
- RIAD, TOMAS (2000a): The origin of Danish stød, in: LAHIRI, ADITI (ed.), *Analogy, levelling and markedness. Principles of change in phonology and morphology*. Berlin/New York: Mouton de Gruyter, 261–300.
- RIAD, TOMAS (2000b): Stöten som aldrig blev av – generaliserad accent 2 i Östra Mälardalen, in: *Folkmålsstudier* 39, 319–344.
- RIAD, TOMAS (2003): Diachrony of the Scandinavian accent typology, in: FIKKERT, PAULA & JACOBS, HAIKE (eds.), *Development in prosodic systems*. (Studies in Generative Grammar 58). Berlin/New York: Mouton de Gruyter, 91–144.
- RIAD, TOMAS (2005): Historien om tonaccenten, in: FALK, CECILIA & DELSING, LARS-OLOF (eds.), *Studier i svensk språkhistoria* 8. Lund: Studentlitteratur, 1–27.
- RINGGAARD, KRISTIAN (1983): Review of Liberman 1982, in: *Phonetica* 40, 342–344.
- RISCHEL, JØRGEN (2001): Om stødets opkomst, in: *Pluridicta* 38, Odense University, 16–25.
- RUTBERG, HULDA (1924): *Folkmålet i Nederkalix och Töre socknar*. Stockholm: Norstedt & Söner.
- SELENIUS, EBBA (1972): *Västnyländsk ordaccent*. (Studier i nordisk filologi 59). Helsingfors.
- SELMER, ERNST W. (1927): *Den musikalske aksent i Stavangermålet*. (avhandlingar utgitt av Det Norske Videnskaps-Akademi i Oslo. Hist.-filos. II:3). Oslo: Brøgger's boktrykkeri.
- SWEDIA 2000. <http://swedia.ling.umu.se/index.html>
- SWEET, HENRY (1877): Sounds and forms of spoken Swedish, in: *Transactions of the Philological Society* 1877, 478–543.
- WITHGOTT, MEG & HALVORSEN, PER-KRISTIAN (1984): Morphological constraints on Scandinavian tone accent, in: *Report no. CSLI-84-II*, Stanford University.
- WITHGOTT, MEG & HALVORSEN, PER-KRISTIAN (1988): Phonetic and phonological considerations bearing on the representation of east Norwegian accent, in: VAN DER HULST, HARRY & SMITH, NINA (eds.), *Autosegmental studies on pitch accent*. Dordrecht: Foris, 279–294.
- YIP, MOIRA (2002): *Tone*. Cambridge: Cambridge University Press.

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