The development of tonal dialects in the Scandinavian languages

Analysis based on talk given at the ESF workshop 'Typology of Tone and Intonation',

Cascais, April 1-3 2004

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Short overview of tone in Scandinavian

– Most dialects in Sweden and Norway have a tonal contrast associated with syllables with primary stress: Accent 1 and Accent 2

– Danish stød corresponds to a considerable degree with accent 1, but is also found with secondary stress

– The accent distinction is lacking
  • in the northernmost parts of Norway and Sweden, and in the Swedish spoken in Finland
  • in some small, isolated areas, the most famous and mysterious perhaps being the ring around Bergen in Western Norway

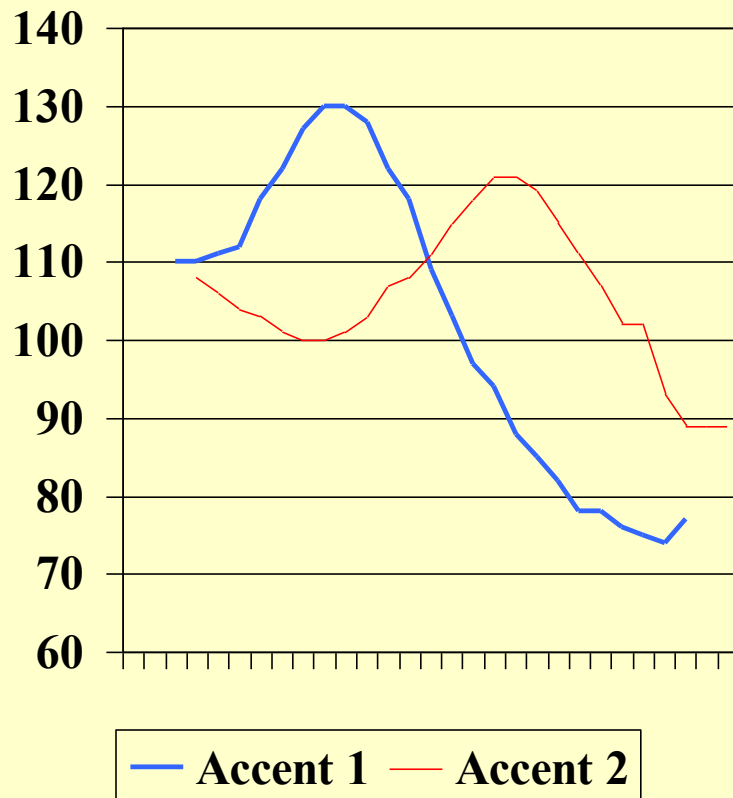# Typology 1: High tone vs. low tone dialects

- = 'Norwegian' classification
- Based on tonal pattern in *accent 1*
  - High tone dialects: High tone associated with the stressed syllable
    - Northern Norway
    - Most parts of Western Norway
  - Low tone dialects: Low tone associated with the stressed syllable
    - East Norwegian
    - Some dialects in Western Norway

Low tone dialect: Oslo
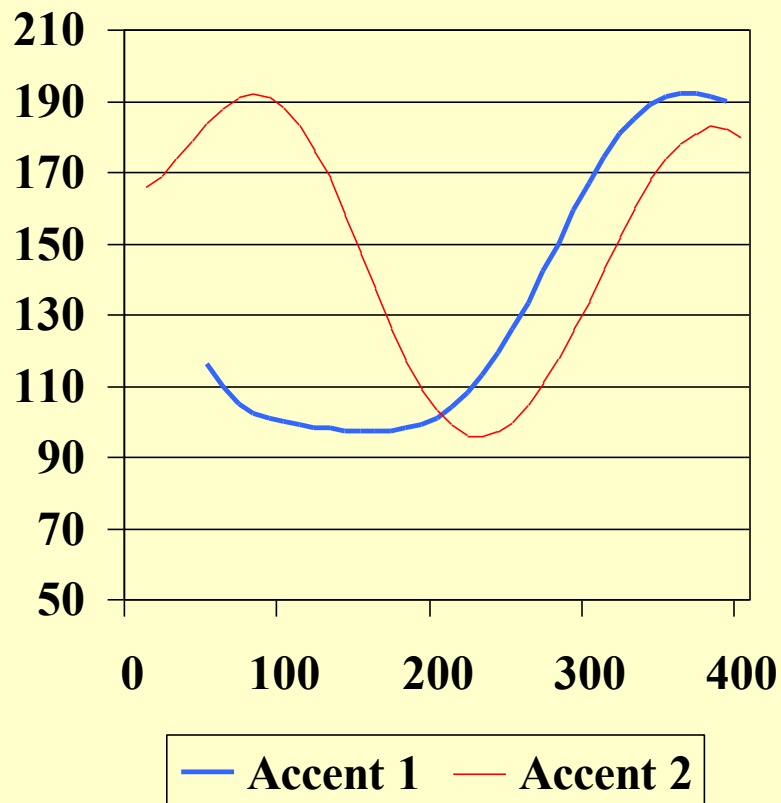
- Low tone on stressed syllable in accent 1
- High falling tone in accent 2
- Accent 1: One peak
- Accent 2: Two peaks

High tone dialect: Bergen

- High tone on stressed syllable in accent 1
- High tone on post-stress syllable in accent 2
- Accent 1: One peak
- Accent 2: One peak

Typology 2: One vs. two peaks in accent 2

- = ʼSwedishʼ classification
- Based on tonal pattern in *accent 2*
  - One peak dialects: A single peak both in accent 1 and accent 2
    - Southern Sweden
    - Gotland
    - The Dala dialects of Central Sweden
  - Two peak dialects: One peak associated with the stressed syllable and one peak further to the right. How far right depends on dialect
    - Other Swedish dialects with tonal contrast

Relation between the typologies

– The two typologies coincide to a considerable degree:

  • One peak dialects ≈ high tone dialects

  • Two peak dialects ≈ low tone dialects

– Exceptions

  • A few two peak dialects (Stavanger, Norway and Älvdalen, Sweden) have high tone accent 1)

Basic phonological analysis 1

– Functional decomposition of melodies

- Lexical tone: Initial tone in accent 2
    - H in low tone dialects, L (?) in high tone dialects
- Prominence tone: Second tone in Accent 2, initial tone in accent 1
    - L in low tone dialects, H in high tone dialects
- Boundary tone: Final tone in both melodies
    - H in low tone dialects, L in high tone dialects

Basic phonological analysis 2

– Privative contrast

- The accent 2 melody: HLH or LHL

- The accent 1 melody: LH or   HL

- The presence of the initial lexical tone H or L in accent 2 causes the common LH or HL part to occur later with respect to the syllabic structure. The perceptual contrast can therefore also be conceived of as one of *timing* of the prominence tone (Einar Haugen)

Diachrony

The origin of the lexical contrast

- The present system correlates almost perfectly with number of syllables in the word in Old Norse
  - Monosyllabic words → Accent 1
  - Polysyllabic words → Accent 2
- The lexical distinction emerged as a result of
  - the incorporation of syllabic clitics/suffixes signaling definite form in nouns, which did *not* result in accent 2 when added to a monosyllabic stem
  - new disyllabic words due to epenthesis in disharmonic codas retained accent 1

Tomas Riadʾs theory 1

– The *origin* can be traced further back, viz. to the metrical system of Proto Nordic
  - Heavy syllables were stressed
  - Stress and high tone were correlated, so that a word with more than one stress would have more than one high tone
  - Syncope (600 – 800 AD) deleted light syllables and made non-initial heavy syllables light. The result was that secondary stressed syllables were made less ʾstressfähigʾ and at the same time brought into contact with the initial primary stress syllable

Tomas Riad's theory 2

- The resulting stress clash led to elimination of stress proper in the formerly heavy syllables, but the high tones associated with these syllables survived

- This resulted in a two-peaked accent 2, as against a single peaked accent 1 in words that before syncope contained but one stressed cum heavy syllable

- The dialects that today belong to this type, must consequently represent the most archaic type

- Most of these dialects are found in Central Sweden, including the capital, Stockholm

Three weak points

- Geographical pattern
- Sociolinguistic pattern
- Empirical motivation for assuming tonal enhancement of secondary stresses
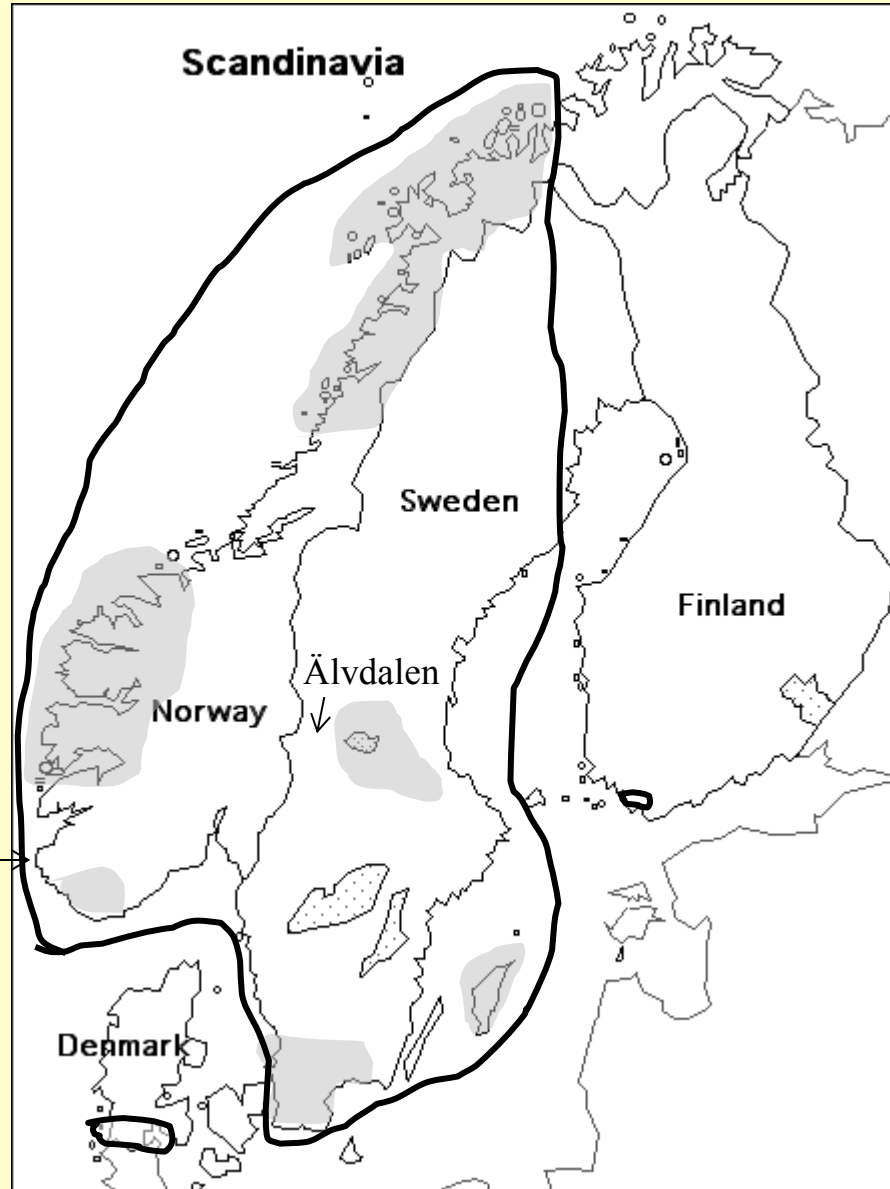
Geographical pattern 1

- Central Swedish is situated centrally not only in Sweden, but also with respect to the total domain of the tonal accent contrast
- At the margins of this domain we find disconnected areas with very similar systems, i.e. with single peak accent 2
- → Map

Map

Thick line:
Areas with
tonal contrast

Shaded areas:
Single peak
accent 2

Geographical pattern (2)

– This suggests that an innovation once took place in the central area of the domain, relegating the more archaic, single peak systems to the margins

– The alternative is to assume that basically the same changes took place independently in these areas

Sociolinguistic pattern

– We would not expect a political and cultural center such as Stockholm to be linguistically conservative in the way assumed in Riad's theory

  • (a rather weak argument, because we cannot assume the uniformity hypothesis with respect to extralinguistic factors)

Tonal enhancement of secondary stresses

- Clear cases of stress systems without lexical tonal contrasts where each (or only final) secondary stress following the primary stress is enhanced tonally seem rare, if not non-existent
- The uniformity hypothesis should make us skeptical against assuming such a state of affairs at earlier stages of history

An alternative hypothesis

– The marginal single peak systems found on Gotland, South Sweden, West Norway and North Norway (+ the centrally located Dala region in Sweden) are the dialects that are closest to the original state of affairs

– Common feature: Different timing of a high tone with respect to the stressed syllable

– Predecessors of present analysis: Elstad 1980, Lorentz 1981, Jahr & Lorentz 1983

Phonological representations
(canonical analysis of West and North Norwegian)

Accent 1   *Accent 2*

H_prom   L   L_lex   H_prom   L
  | |
'σ   σ   'σ   σ

Accent distinction = different timing of H caused by the presence of a lexical L on the stressed syllable in accent 2

The argument

- In Kristoffersen (forthcoming) I argue, on the basis of recently recorded data from Bergen (West Norway), that L_{lex} is absent from the accent 2 melody in some dialects

- To the extent that this is correct, the different timing of H_{prom} cannot be derived as an automatic effect of there being a lexical tone associated with the stressed syllable

- My proposal is that this state of affairs represents the most archaic system, more or less directly mirroring the melodies that were in use in all Scandinavia (?) at the time when the accent distinction established itself

Basic assumptions

– Proto Nordic after the syncope period had a pitch accent, or intonational tune, H*L that was attracted to main stress syllables

– In words where the stressed syllable was followed by one or more unstressed syllables, a delayed peak effect (see e.g. Yip 2000: 8f.) developed, causing the H* to be realized later in polysyllabic than in monosyllabic words

– By the time the lexical accent distinction developed, this difference had been phonologized, so that the H* i polysyllabic words was associated with the post-stress syllable as a result of a phonological rule or constraint

A sketch of an OT grammar
(Initial state)

- Tune to be associated: H*L

- Accent 1
  - H*L is associated to head by default in monosyllabic *words* since no delay is possible within the word. On the assumption that the def.-’ suffixes’ represented clitics, accent 1 is accounted for in the monosyllabic-stem forms as well
  - In polysyllabic words, H*L is linked to the head syllable in the input, making it the marked accent. A highly ranked faithfulness constraint, *Disassociate, will keep lower ranked markedness constraints at bay

A sketch of an OT grammar

– Accent 2

- H*L floats in the input and its association is decided by markedness and faithfulness constraints

- Undominated constraints

  – Associate H* within Grammatical Word (AssH*$_{GrWd}$)

    » H* must be associated within the boundaries of the GrWd

    » This constraint secures that H* is not realized past the right word edge, e.g. on clitics. It is undominated at this stage, and will only be shown in the first tableau

A sketch of an OT grammar

- Accent 2 (ctd.)
  - Other undominated constraints
    - OCP: Adjacent tones cannot be identical
    - NoGap: TBUs may not be skipped
    - TBU = σ
  - Markedness constraints with critical rankings at different stages of the diachronic development
    - HeadMax to High (HdMaxToH): Maximal heads are linked to high tones
      - » Promotes insertion of H on primary stressed syllables. Critically dominates DepT at one point only, i.e. at the transition from one peak to two peak accent 2

A sketch of an OT grammar

– Markedness constraints Accent 2 (ctd)

  – High to Head (HtoHd): High tones in input link to metrical heads

  – *NonHd/H: No High tone on Non-Heads

  – DelayedPeak H* (DelPeakH*): Link H* to post-head syllable

  – No Long H (NoLongH): High tones are only associated to one tbu (No spreading of H)

  – No Long L (NoLongL): Low tones are only associated to one tbu (No spreading of L)

  – Specify T: All tbus must be tonally specified

A sketch of an OT grammar

- – Markedness constraints Accent 2 (ctd)
  - – AllTonesLeft (AllT Left): Tones are aligned with the left edge. Computation: Assign one mark for every tone that is not as close as possible to the left edge. (Long tones are worse the further to the left they are.)
  - – Align H* R (Align R): Align H* with right edge of word
  - – NoCrowding: No more than one tone per tbu
- • Faithfulness constraint
  - – DepT: No insertion of tones
  - – MaxT: No deletion of tones

Initial state

– Grammar

- AssH*$_{GrWd}$, (OCP, DepT) >> DelPeakH*, (Specify), HtoHd, HdMaxtoH, Align H* R

    – Constraints in parantheses are not included in tableaux for space saving reasons

Tableaux, initial state

Accent 2

Monosyllabic word

H*L 'σ] σ	AssH*$_{GRWd}$	DelPeakH*	H$_{TO}$H$_D$	H$_D$M$_{AX}$ $_{TO}$H	Align H* R
H*L 'σ] σ ☞		*			
H*L 'σ] σ	*!		*	*	*

Disyllabic word

H*L 'σ σ]	OCP	DEPT	DEL PEAKH*	SPECIFY	NO CROWDING	HTOHD	HDMAX TOH	ALIGN H* R
H*L | | 'σ σ]			*!					*
H*L 'σ σ] ☞				*	*	*	*	
L H*L | 'σ σ]		*!			*	*	*	
H H*L | 'σ σ]	*!				*			

Polysyllabic word

H*L 'σ σ σ]	OCP	DEPT	DEL PEAKH*	SPECIFY	NO CROWDING	HTOHD	HDMAX TOH	ALIGN H* R
H*L 'σ σ σ]			*!					**
H*L 'σ σ σ]☞				*		*	*	*
H*L 'σ σ σ]			*!			*	*	
L H*L 'σ σ σ]		*				*	*	*
H H*L 'σ σ σ]	*!	*						*

Motivation

- The grammar makes as much as possible use of established constraints, known from analyses of other tonal systems. It therefore represents a plausible analysis

- The grammar accounts for the one syllable delay of the pitch accent in polysyllabic words. Delayed Peak in other words explains the apparently arbitrary syllable counting principle

- The tension between the constraints pulling the H towards the primary metrical head (All Tones Left, HdMaxtoH and DelPeak H*) and the constraint pulling it towards the right edge of the word (Align H* R, Hto (secondary) Hd), makes the grammar prone to change

Subsequent changes

– The other (main) varieties of accent 2 found in Norway and Sweden can now be accounted for by migration of H* to the right, pulled by secondary metrical heads and finally Align H* R

  - L-insertion on primary stressed syllable
  - Connectivity in compounds
  - Main stress shift
  - Accent 2 with two peaks, and with second peak associated at different points with respect to the right edge

L-insertion on stressed syllable

– Occurrence is hard to ascertain, but the assumption that there is a lexical L linked to stressed syllable, represents the ʾestablishedʾ analysis of most single peak dialects

– Candidate dialects are those found in shaded areas on map above, but at least some of these seem to lack the L-tone, as noted already

L-insertion on stressed syllable

- L-insertion represents the next logical step, triggered by demotion of DepT below Specify, which will force tone epenthesis on the stressed syllable
- OCP will secure that the tone inserted is L, even if H is less marked on a metrical head and preferred by HdMaxtoH
- After insertion, the next generation to learn the dialect will make the L part of the underlying melody by Lexicon Optimization

L-insertion on stressed syllable

– This will not make DelPeak obsolete, since possible spreading of initial L may force the H* to link more than one syllable to the right of the head

– New grammar

  • OCP, DelPeakH*, Specify, (NoCrowding) >> HtoHd, HdMaxtoH, Align H* R, DepT

– In order to keep track of the migrating H, I shall continue marking it as H*, even though its function as accent associated with the metrically strongest syllable disappears

L-insertion

H*L 'σ σ σ]	OCP	DelPeak H*	Specify	HtoHd	HdMax ToH	Align H* R	Dept
H*L 'σ σ σ]		*!				**	
H*L 'σ σ σ]			*!	*	*	*	
H*L 'σ σ σ]		*!	**	*	*		
L H*L 'σ σ σ] ☞				*	*	*	*
H H*L 'σ σ σ]	*!					*	*

Compounds as primary data

– From this point onwards, compounds of the form /ˈσ σ σ ˌσ σ σ/ will be used a fixed prosodic frame for all candidates

– The reason for using compounds is that secondary stresses in many dialects play an important role in determining the association pattern of the tonal melodies

– Note that in compounds, the difference between HtoHd and HdMaxto H emerges

Compounds as primary data

– The following tableau shows the grammar after L-insertion at work in compound candidates. In order to derive the correct spreading pattern, the grammar has been supplemented by NoLongH as undominated

L-insertion in compounds

H* L 'σ σ σ ˌσ σ σ]	OCP	DELPEAKH*	NOLONG H	SPECIFY	HTOHD	HDMAX TOH	ALIGN H* R	DEPT
H*L 'σ σ σ ˌσ σ σ]		*!					****	
H*L 'σ σ σ ˌσ σ σ]				*!	*	*	***	
L H*L 'σ σ σ ˌσ σ σ] ☞					*	*	***	*
H H*L 'σ σ σ ˌσ σ σ]	*!				*		***	*
L H*L 'σ σ σ ˌσ σ σ]		*!				*	*	*
L H* L 'σ σ σ ˌσ σ σ]			*!			*	*	

Connectivity (1)

- Implies that H* spreads to the final secondary stress, *connecting* the first (primary) metrical head and the final metrical head

- Absence vs. presence of connectivity accounts for difference between West Norwegian + South Sweden (no connectivity) vs. North Norwegian (connectivity)

Connectivity (2)

- Changes in grammar
  - Demotion of NoLongH allows long tone between the syllable that fulfulls DelPeakH* and the secondary head
  - Promotion of *NonHd/H below HtoHd blocks spreading beyond the secondary head
  - DepT reinstated as unviolated

- New grammar
  - (OCP, Specify, NoCrowding, DepT), DelPeakH* >> HtoHd >> *NonHd/H >> HdMaxtoH, Align H* R

Connectivity

L H*L 'σσσ͵σσσ]	DelPeak H*	HtoHd	*NonHd/H	HdMax toH	Align H* R	NoLong H
L H* L 'σσσ͵σσσ]☞			*	*	**	*
L H*L 'σσσ͵σσσ]		*!		*	****	
L H*L 'σσσ͵σ σσ]	*!			*	**	
L H* L 'σσσ͵σσσ]			*!*	*	*	*

Primary stress movement in compounds (1)

- Occurs in several dialects in West and East Norway, and some Swedish dialects
- Primary stress moves from initial to final compound member
- The fact that this takes place in accent 2 words only, and that primary stress remains on initial member in accent 1 compounds, shows that there must be a tonal explanation for the pattern

Primary stress movement in compounds (2)

– Changes in grammar
  - Demotion of DelPeak H*
  - Top ranking *NonHd/H

– New grammar
  - (OCP, Specify, NoCrowding, DepT), *NonHd/H >> HtoHd, HdMaxtoH, Align H* R, DelPeakH*

– Additional assumption
  - A metrical head associated with the only H in the domain is promoted to HeadMax

Primary stress movement

L H*L 'σ σ σ ,σ σ σ]	*NonHd/H	HtoHd	HdMax toH	Align H* R	DelPeak H*
L H*L 'σ σ σ ,σ σ σ]	*!	*	*	****	
L H* L 'σ σ σ ,σ σ σ]	*!*		*	**	
L H*L 'σ σ σ ,σ σ σ] ☞			*	**	*
L H*L 'σ σ σ ,σ σ σ]	*!	*	*	*	
L H* L 'σ σ σ ,σ σ σ]	*!*		*	*	

Development of two peak accent

- First stage: Insertion of H on HdMax
  - Initial state:
    - Lexicalized LH*L without connectivity: (OCP, NoCrowding, Specify) DelPeakH*, NoLong H >> HtoHd, HdMaxtoH, Align H* R, DepT
  - Changes in grammar
    - Demotion of DelPeak H*
    - DepT kept low
    - AllT L and HdMaxtoH top ranked
  - New grammar
    - (OCP, SpecifyT, NoCrowding), AllT Left, HdMaxtoH >> HtoHd, Align H* R, DelPeakH*, DepT

Development of two peak accent

- First stage (ctd.)
  - Top ranked HdMaxtoH triggers insertion of H on HdMax
  - Top ranked AllT L accounts for lack of spreading of H* to secondary stress
- This pattern is found in Älvdalen (Central Sweden) and is claimed to hold in Stavanger (West Norway)
  - More recent data suggest that H* spreads to penult in Stavanger

Change of intonational function of H*

- – Until this stage, the function of H* can be interpreted as primary stress enhancement, ensured by high ranking DelPeak and HtoHd
- – At the point where another H is inserted on HeadMax in accent 2, this function is blurred
- – In present day Stavanger, H* on Accent 1, which until recently has been linked to HdMax, has started migrating to the right as well, with subsequent L-insertion, but not followed by H-insertion

Change of intonational function of H*

- In all later stages (Central Swedish, West Swedish and East Norwegian) H* is perfectly aligned in the two accents, the difference no more being different timing of H*, but different timing of the preceding L, due to H-insertion in accent 2
- In these dialects, H* signals focus

First stage: Insertion of H on Hd/Max

L H*L 'σ σ σ ˌσ σ σ]	H$_D$M$_{AX}$ T$_O$H	A$_{LL}$T L	H$_{TO}$H$_D$	A$_{LIGN}$ H* R	D$_{EL}$P$_{EAK}$ H*	D$_{EP}$T
L H*L | | 'σ σ σ ˌσ σ σ]	*!			****		
H L H*L | | | 'σ σ σ ˌσ σ σ] ☞			*	***	*	*
H L H*L | | 'σ σ σ ˌσ σ σ]		*!*	*	**	*	*
H L H* L | | 'σ σ σ ˌσ σ σ]		*!	*	**	*	*

Stavanger revised

- Recent recordings of speakers of the Stavanger dialect suggest that H* spreads to the penultimate syllable in compounds, irrespective of the position of the secondary stress

- This can be accounted for by ranking No Long Low T (NoLongL) above AllT L

- At the same time, DepT can be assumed to be reinstated as undominated

- New Grammar
  - (OCP, SpecifyT, NoCrowding, DepT), HdMaxtoH, NoLongL >> AllT Left >> Align H* R, HtoHd, DelPeakH*

Stavanger revised

H L H*L 'σ σ σ ,σ σ σ]	HᴅMᴀx ᴛoH	NoLongL	AllT Left	Align H* R	HᴛoHᴅ	DelPeak H*
H L H*L | | | ⟋ 'σ σ σ ,σ σ σ]		*!		**	*	*
H L H*L | ⟍ | ⟋ 'σ σ σ ,σ σ σ]		*!	**	*		*
H L H* L | | ⟋ | 'σ σ σ ,σ σ σ]☞			*			*
H L H*L ⟍ | | | 'σ σ σ ,σ σ]			*!**			

Further developments

- Rightwards migration of H* without spreading
  - Unattested (?) or Eskilstuna (Riad 2003: 103ff)
    - Migration of H* to final metrical head in compounds
  - Central Swedish, incl. Stockholm
    - Migration of H* to syllable following final metrical head
  - West Swedish (Göta) and East Norwegian
    - Migration of H* to Right Edge
- Initial state: After H-insertion on primary stressed syllable (Älvdalen)

Unattested type
(Eskilstuna?)

– Other Central Swedish dialects than Stockholm should be checked for possible cases

– Ranking, initial state

- (OCP, SpecifyT, NoCrowding, DepT), AllT Left, HdMaxtoH >> HtoHd, Align H* R, DelPeakH*

– Changes in grammar

- Demotion of AllT Left
- HtoHead high ranked
- NoLongH high ranked

Unattested type

– New grammar

- (OCP, SpecifyT, NoCrowding, DepT), HdMaxtoH, HtoHd, NoLongH >> Align H* R, DelPeakH*, AllT L

Unattested type

(Eskilstuna?)

H L H*L 'σ σ σ ˌσ σ σ]	HDMAX TOH	HTOHD	NOLONGH	ALIGN H* R	DELPEAK H*	ALLT LEFT
H L H*L 'σ σ σ ˌσ σ σ]		*!		***	*	
H L H*L 'σ σ σ ˌσ σ σ] ☞				**	*	**
H L H* L 'σ σ σ ˌσ σ σ]			*!	***	*	**
H L H*L 'σ σ σ ˌσ σ σ]		*!		*		****

Stockholm

(Central Swedish)

– H* migrates to syllable following the final secondary stress

– Initial stage = Eskilstuna

– Changes in grammar

- Promotion of DelPeakH*

- Demotion of HtoHd

– New grammar

- (OCP, SpecifyT, NoCrowding, DepT), HdMaxtoH, DelPeakH*, NoLongH >> HtoHd, Align H* R, (AllT Left)

Central Swedish
(Stockholm)

H L H* L 'σ σ σ ͵σ σ σ]	HdMax toH	DelPeak H*	NoLongH	HtoHd	Align H* R
H L H*L 'σ σ σ ͵σ σ σ]		*!		*	***
H L　　H*L 'σ σ σ ͵σ σ σ]		*!			**
H L　　H*L 'σ σ σ ͵σ σ σ] ☞				*	*
H　　L H*L 'σ σ σ ͵σ σ σ]			*!	*	*

West Swedish and East Norwegian

- H* migrates as close to final edge as possible, at least in East Norwegian causing the final L to delete

- Initial state = Stockholm

- Changes in grammar
  - Demotion of DelPeak*
  - Promotion of Align H* R
  - Low ranking of MaxT

- New grammar
  - (OCP, SpecifyT, NoCrowding, DepT) HdMaxtoH, Align H* R >> NoLongH >> HtoHd, DelPeakH*, MaxT, (AllT Left)

West Swedish and East Norwegian

– The East Göta dialects of West Swedish may represent the intermediary stage where the final L survives, so that H* is realized on the penultimate syllable, cf. Riad 2003 p. 106

West Swedish and East Norwegian

H L H* L 'σ σ σ ˌσ σ σ]	HᴅMᴀx ᴛᴏH	Aʟɪɢɴ R H*	NᴏLᴏɴɢH	HᴛᴏHᴅ	Mᴀxᴛ	DᴇʟPᴇᴀᴋ H*
H L H*L 'σ σ σ ˌσ σ σ]		*!**		*		*
H L H*L 'σ σ σ ˌσ σ σ]		*!*				*
H L H*L 'σ σ σ ˌσ σ σ]		*!		*		
H L H* 'σ σ σ ˌσ σ σ] ☞				*	*	*
H L H* 'σ σ σ ˌσ σ σ]			*!	*	*	*

References

- Riad, Tomas 2003. Diachrony of the Scandinavian accent typology
- Elstad, Kåre 1980. Some Remarks on Scandinavian Tonogenesis. Nordlyd: Tromsø University Working Papers on Language & Linguistics 3, 62-77
- Haugen, Einar & Martin Joos 1952. Tone and Intonation in East Norwegian. Acta Philologica Scandinavica 22: 41-64
- Jahr, Ernst Håkon & Ove Lorentz 1983. Innleiing. In Ernst Håkon Jahr & Ove Lorentz (eds.): Prosodi/Prosody. Oslo: Novus
- Lorentz, Ove 1981: Adding tone to tone in Scandinavian dialects. In Thorstein Fretheim (ed.): Nordic Prosody II. Trondheim: Tapir
- Oftedal, Magne 1952. On the origin of the Scanidnavian tone distinction. Norsk tidsskrift for sprogvidenskap 16, 201-225