

# Optimizing the relation between tone and prominence: Evidence from Franconian, Scandinavian, and Serbo-Croatian tone accent systems

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## Abstract

This paper provides a diachronic explanation for related changes in the tonal melodies of Franconian, Scandinavian, and Serbo-Croatian tone accent systems. It is argued that in each of these systems, some dialect groups have optimized the relation between tone and prominence by replacing cross-linguistically marked low level or rising pitch contours in (nuclear) accent syllables with unmarked high level or falling ones. Two diverse adaptation strategies can be identified, essentially leftward shifts of pitch vs. pitch raising at the beginning of accent syllables. These diverse strategies can lead to a reversal of tonal melodies across related dialects, as can most clearly be demonstrated on the basis of a tonal reversal in declaratives between so-called Rule A vs. Rule B dialects in Franconian. The analysis allows for a reconstruction of the original accent oppositions in Franconian and Scandinavian dialects: it can be shown that despite their different origins, the languages had similar original tonal contours for the two tone accents, and the diverse melodies among modern dialect groups are the outcome of similar developments. The paper contributes to our understanding of diachronic (Germanic) accentology and provides a tool set for reconstructing diachronic changes in the tonal melodies of prosodic systems.

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## 1. Introduction

The diachronic development of pitch oppositions in the world's languages has never stopped puzzling linguists – either with respect to the genesis of such a contrast or its subsequent areal spreading. The latter often goes hand in hand with modifications of the opposition. Such modifications can be of help in reconstructing the stages a contrast underwent from its origins to its synchronic manifestations. From a more general perspective, successful reconstructions deepen our insight into possible and impossible, likely and unlikely diachronic developments of tonal contours. This paper aims to contribute to these aspects of historical linguistics; it offers interrelated solutions to two fundamental issues in Germanic accentology. I argue that the diachronic developments towards the tonal melodies in diverse modern Franconian and Scandinavian tone accent dialects can be explained with the same set of tonal changes. These changes led to an optimization of the relation between tone and prosodic prominence, which I will refer to as *tone-prominence optimization* (TPO). Additional support for my analysis will come from two diachronic developments in the history of Serbo-Croatian.

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The starting point and empirical focus of my considerations is a long-standing issue concerning the history of Franconian tone accent dialects, spoken in parts of Germany, the Netherlands, Belgium, and Luxembourg. These dialects show a prosodic opposition of two word accents, which I refer to as Class 1 and Class 2.<sup>1</sup> The occurrence of the accents is restricted to syllables carrying word stress; the accents are functionally relevant for the distinction of lexical items and morphological units. In (1), I provide three minimal pairs from Mayen dialect (data from Schmidt, 1986). A superscript ‘c1’ indicates that the relevant item belongs to Accent Class 1, ‘c2’ indicates a Class 2 membership:

- |     |    |                        |            |                        |            |
|-----|----|------------------------|------------|------------------------|------------|
| (1) | a. | [man <sup>c1</sup> ]   | ‘basket’   | [man <sup>c2</sup> ]   | ‘man’      |
|     | b. | [tuʊ <sup>c1</sup> ]   | ‘pigeon’   | [tuʊ <sup>c2</sup> ]   | ‘baptism’  |
|     | c. | [ʃda:n <sup>c1</sup> ] | ‘stone-pl’ | [ʃda:n <sup>c2</sup> ] | ‘stone-sg’ |

In most dialects, the tonal melodies of the accents vary under different intonations, for instance, under declarative vs. interrogative intonation. As I shall demonstrate below, this diversity is relevant for the diachronic explanation of a complex tonal reversal between neighboring dialect areas whose origins, as I claim, have been misunderstood for almost a century after its discovery. According to a description in Bach (1921), the tone accents in the dialect of Arzbach show reversed tonal melodies in comparison to other dialects in the area. Bach motivates his claim on the basis of declarative intonation: in this context, both the Arzbach dialect as well as other dialects use relatively early vs. late pitch falls in the accent syllable to distinguish between the two accent classes; yet Bach’s observations suggest that Arzbach speakers use early falls in words that are pronounced with late falls in other dialects; to complete the reversal, the Arzbach dialect has late pitch falls in words where other dialects have early falls (see Bach, 1921:267).<sup>2</sup> The particularity of the data is reflected in Bach’s astonishment when he reports his findings:

- (2) “This fact is so striking that – when I believed I noticed it eight years ago – I was tempted to doubt the correctness of my observations.”<sup>3</sup> Bach (1921:267).

In the literature, the reversed tonal melodies of Arzbach have been classified as following a distributional *Rule B*, opposed to *Rule A* dialects (Wiesinger, 1970). Rule A is commonly regarded as the default; that is, these dialects have ‘standard’, non-reversed tonal melodies for the accents. Schmidt (1986) states that Rule B dialects have undergone a *Rule Reversal*. Since its discovery, the diachronic development of this tonal reversal has been under debate: as Schmidt (2002:217) points out, the genesis of Rule B is “a central problem for the diachronic explanation of the tone accents”.<sup>4</sup> Starting with Bach, several attempts to account for the reversal have been made, and no consensus has been reached yet. There are two general lines of reasoning: some scholars regard the split as a result of independent processes in Rule A and Rule B (Bach, 1921; Boersma, 2006; Kortlandt, 2007), whereas Schmidt and Künzel (2006) as well as Werth (2011) propose borrowing scenarios in which Rule B is regarded as the outcome of a ‘failed’ adaptation process towards neighboring Rule A dialects.

The abovementioned approaches have in common that they only discuss the contours in declarative intonation; only those were reported in Bach’s paper. Although Bach does not state it explicitly, it could be – and in fact has been – concluded from his descriptions that *all* tonal melodies in Rule B are reversed. Recently gathered facts from the Arzbach dialect, however, indicate that this is not the case: the phonetic analyses in Köhnlein (2011) show that there is indeed a reversal of tonal melodies under declarative intonation, as indicated by Bach. Surprisingly, however, the reversal is not complete: the contours in interrogatives are *not* reversed but rather resemble those of Rule A. In (3), the average Arzbach contours in nuclear accent syllables are compared to those from the Rule A dialect of Cologne (data from Peters, 2006a):

















<sup>1</sup> Note that this terminology differs from the ‘traditional’ one where the accents are defined from a phonetic perspective and referred to as Accent 1 (early tonal movements) and Accent 2 (late movements, with some variation in phrase-final positions), after Schmidt (1986). For so-called Rule B dialects (to be introduced in detail below), however, grouping the accents along these lines is severely problematic (see Köhnlein 2011:6–7 for further discussion). To avoid this, I group the accents according to word classes rather than according to phonetic realizations; a similar way of grouping can be found for the Scandinavian tone accents (see e.g. Kristoffersen, 2000; Liberman, 1982 for overviews). This allows for a direct comparison of the dialect areas; yet it implies that for Rule B, Class 1 corresponds to Accent 2 in previous work, and vice versa.

<sup>2</sup> Bach’s observations are translated freely: Bach himself states that Arzbach speakers show falling contours in words where the rest of the area doesn’t, and vice versa (Bach, 1921:267). As pointed out by an anonymous reviewer, this formulation is ambiguous. With the chosen wording, I aim to circumvent this problem; this does not affect the essence of Bach’s claims.

<sup>3</sup> Translation: Köhnlein. Original text (orthography as in original): “Diese tatsache ist so auffällig, daß ich, als ich sie vor nunmehr acht jahren feststellen zu glauben sollte, in die versuchung kam, an der richtigkeit meiner beobachtungen zu zweifeln.”

<sup>4</sup> Translation: Köhnlein. Original text: “[...] ein Zentralproblem der sprachhistorischen Erklärungsversuche der RhA [Rheinischen Akzentuierung; Köhnlein]”.

- (3) Comparison of pitch contours between Arzbach (Rule B) and Cologne (Rule A) in the nuclear accent syllable; (non-)shading indicates corresponding tonal melodies

Condition	Arzbach		Cologne	
	Class 1	Class 2	Class 1	Class 2
Declarative, non-final				
Declarative, final				
Interrogative, non-final				
Interrogative, final				

The contours in (3) indicate that only the declarative intonation shows reversal: early falls in Arzbach correspond to late falls in Cologne (Class 2), and vice versa (Class 1). In interrogatives, however, the picture is different: we find early rises for Class 1 throughout both dialects, whereas in Class 2, the low tonal targets are located late in the syllable. The similarities become particularly clear when we look at interrogatives in phrase-final position: in both dialects, early rises in Class 1 correspond to late rises in Class 2. As a consequence, there is no full reversal of tonal contours in Arzbach. Instead, I speak of “semi-reversed tonal contours” (Köhnlein, 2011:68).<sup>5</sup>

In the light of these new findings, we can conclude that previous proposals concerning the development of Rule A vs. Rule B cannot be sufficient, as the set of data taken into account was incomplete (only reversed declaratives but not non-reversed interrogatives). To overcome this explanatory gap, this paper explores how the new data may be of help in clarifying the reversal between the dialect areas. I argue that the similarities in interrogative intonation can be regarded as a key factor in understanding the phenomenon: they are remainders of an old common stage in Franconian (which I call Rule 0). The tonal reversal in declaratives, on the other hand, is regarded as an innovation: as this paper shall discuss, both Rule A and Rule B changed marked rising intonational melodies to unmarked falling/high level contours, resulting in an optimization of the relation between tone and prosodic prominence: *tone-prominence optimization* (TPO). I claim that the diverse modern systems developed out of a common predecessor with rising-falling intonation from the accented syllables onwards; the original opposition was between an accent with an early rise in the accent syllable (Class 1) vs. one with a late rise (Class 2).

As I demonstrate below, the proposed markedness reduction can be the result of two diverse adaptation strategies, horizontal adjustments vs. vertical adjustments: these two strategies can lead to significantly different tonal contours, albeit they derive from the same original contrast – even to a tonal reversal, as we find it in present day Rule A vs. Rule B declaratives in Franconian.<sup>6</sup>

The working scope of TPO is not restricted to Franconian only. While related diachronic changes can be found in Serbo-Croatian dialects (Čakavian, Old-Štokavian), I argue that the most striking similarities can be found between Franconian and Scandinavian tone accent languages, which establishes a hitherto unnoticed connection between these Germanic accent systems. While the substantially different lexical distributions indicate that the accent genesis occurred independently in the two areas, I argue that the modern systems still have important aspects in common: first of all, they had similar original contours for the two accents. Furthermore, Scandinavian dialects have later undergone modifications of the contours similar to those in Franconian, leading to the sometimes substantially diverse modern dialect groups in the area. Exemplifying my proposal for Central Swedish dialects, the analysis contributes to an ongoing debate on the

<sup>5</sup> Note that these new insights do not indicate a misjudgment by Bach (1921); they are rather the result of his limited data set: recall that Bach only took declarative intonation into account but not interrogatives (which was common practice at the time). This also makes it likely to assume that these alignment differences were already present when Bach did his research, rather than being the result of a recent ‘re-reversal’ in interrogatives.

<sup>6</sup> Next to Rule A and Rule B, there is an area with a mixed lexical distribution of the tone accents, so-called Rule A/B, located in the Hunsrück area (e.g. Schmidt and Künzel, 2006). Roughly, the area has Rule B-like contours for some word groups while other word groups behave as in Rule A. The causes of this distributional split are still unclear (cf. Schmidt and Künzel, 2006:138). As this paper focuses on the development of the tonal melodies rather than on questions of lexical distributions, the issue is not of immediate relevance to the proposed developments. Therefore, I will not discuss it in further detail.

diachronic relation between diverse modern Scandinavian accent systems (for recent contributions, see Bye, 2004, 2007, 2011; Perridon, 2006; Riad, 1996, 1998, 2000, 2003, 2006, 2009).<sup>7</sup>

The structure of the paper is as follows: Section 2 introduces the (limited) set of theoretical tools used in this paper. Section 3 provides an explanation of the Rule Reversal in Franconian. Section 4 focuses on parallel developments in Scandinavian, leading to the diverse modern tone accent dialects, and furthermore identifies related diachronic changes in Čakavian and Old-Štokavian dialects of Serbo-Croatian. Section 5 summarizes the main findings and briefly discusses possibilities for future research.

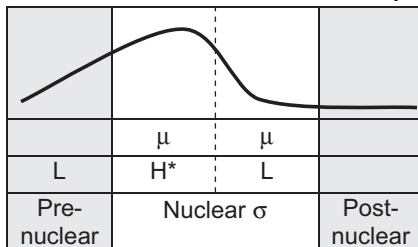
## 2. Theoretical tools and terminology

The theoretical tools I use are limited and mainly serve descriptive purposes; I believe that the fundamental insights of my diachronic account are not theory-dependent and could therefore be expressed in different frameworks. My representational tools are couched in the framework of autosegmental and metrical theory. I represent tonal contours as sequences of the tonal targets *High* (H) and *Low* (L) (see e.g. Goldsmith, 1976; Leben, 1973). Furthermore, I make use of well-established notions within the prosodic hierarchy: I refer to the relevant intonational units as *intonational phrases* and assume that heavy syllables ( $\sigma$ ) contain two moras ( $\mu$ ). These notions are standard in the study of prosodic phenomena; see e.g. Gussenhoven (2004), Hayes (1994), Hyman (1985), Pierrehumbert (1980), Ladd (2008), and Yip (2002) for overviews and discussion.

Intonational melodies are represented as sequences of tones; I will also refer to them as *pitch accents*. One of these tones is the so-called *starred tone* (T\*): this tone signals focus and is usually aligned with the most prominent syllable in the intonational phrase, which I will refer to as the *nuclear syllable*. T\* can be preceded or followed by other tones. Preceding tones are referred to as *leading tones*, following tones as *trailing tones*. These tones can either be associated with the nuclear syllable or occur in *pre-* or *post-nuclear* position. Lastly, edges of phrases are often marked with *boundary tones*, signaling syntactic/prosodic boundaries.

In an intonational melody LH\*L, the first L will be the leading tone, followed by H\*, which precedes a trailing L. Phonetically, this sequence will be realized as a rising-falling contour; one possible phonetic realization of such a melody is given in (4):

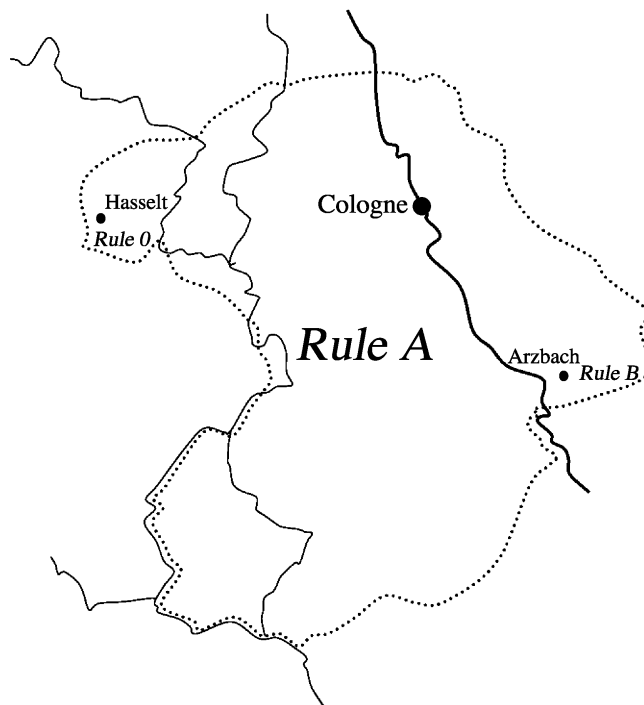
(4) Possible realization of a tonal melody LH\*L



The nuclear syllable is non-shaded and, in this hypothetical case, contains two moras that receive the H\* and the low trailing tone. The grey-shaded area preceding the nuclear syllable symbolizes the pre-nuclear part of an intonational phrase, the one following it the post-nuclear part. In the data discussed below, nuclear syllables are of primary relevance, as they show the respective accent contrasts; therefore, they will always be displayed. Post- and/or pre-nuclear contexts will only be given when relevant.

In this paper, I will not make any specific claims concerning the synchronic lexical representation of the accents, as it seems to me that the proposed diachronic processes are largely independent of these issues. For both Franconian and Scandinavian, there are basically two competing synchronic analyses of the phenomena within autosegmental phonology: the 'traditional' account attributes the surface differences between the accents to the presence of a lexical tone on one of the accents (see e.g. Gussenhoven, 2000a,b, 2012; Gussenhoven and van der Vliet, 1999; Hanssen, 2005;

<sup>7</sup> Notice that in between the Franconian and the Scandinavian accent areas, there is a third area with an accentual opposition, Low German, which has been analyzed as having either a ternary quantity opposition or as a tonal contrast between two bimoraic accents (see e.g. Höder, 2010; Prehn, 2007, 2012 for recent phonological/phonetic studies; Ternes, 2006 for a comparison between Franconian and Low German). Yet the set of available phonetic data from different dialects is limited, particularly for interrogatives (yet see Prehn, 2012:259 for a short remark on question intonation in Altenwerder). Further typological research is needed before it can be determined whether similar developments to the ones proposed for Franconian or Scandinavian may also be found in Low German dialects.



Map 1. The South Low Franconian and Central Franconian tone accent area (marked by dotted line). Adapted from Peters (2007).

Peters, 2006a, 2008 for Franconian and e.g. Bruce, 1977; Gussenhoven, 2004; Kristoffersen, 2000; Lahiri et al., 2005a,b, 2006; Riad, 1996, 1998, 2003 for Scandinavian). A second, more recent approach regards the accent opposition to be of metrical nature. One example is the analysis defended in Köhnlein (2011) for Franconian; see also Hermans (2009), Kehrein (in press) for Franconian, and Morén (2005, 2007); Morén-Duolljá (2013) for Scandinavian. The tonal mappings given throughout this paper are perfectly compatible with synchronic metrical analyses of the tone accents.

### 3. The development of a semi-reversal in Franconian dialects: Rule A vs. Rule B

#### 3.1. Reconstructing a common predecessor of modern Franconian dialects

This section deals with the reconstruction of a common predecessor of modern Franconian dialects, from which Rule A and Rule B will be subsequently derived. As a basis for this reconstruction, I will identify the fundamental synchronic differences and similarities between three basic dialect groups in Franconian. Data for two of the three relevant areas – Cologne for Rule A and Arzbach for Rule B (reversal in declaratives, similarity in interrogatives) – have already been provided in Section 1. Additional data are taken from the dialect of Hasselt (Peters, 2006b, 2008); they represent the third basic dialect area, which I refer to as *Rule 0*.<sup>8</sup>

Rule A is the main variety of Franconian (spoken in East Limburgian, Ripuarian, Moselle Franconian) while Rule 0 and Rule B are relatively small areas: Rule 0 is spoken at the Western border (West Limburgian), while Rule B can be found in the east of the area (the Westerwald), located to the right of the Rhine (see Map 1). The exact borders of Rule B are as yet unknown, except for the South where it coincides with the borders of the tone accent area (see Bach, 1921; Wiesinger, 1970). As shown in (5), the pitch contours in these dialect areas are substantially different from each other in declaratives; yet they are much more similar in interrogatives.

The realizations are best compared in four triplets, separated by thick lines; these triplets represent the realizations of a particular accent class in nuclear syllables of declaratives and interrogatives, respectively. The non-shaded parts of the

<sup>8</sup> Note that by referring to West-Limburgian dialects as belonging to Rule 0 instead of Rule A(2), I introduce a new term. I chose for a separate term since, as discussed in the following paragraphs, I regard Rule 0 as an independent dialect group that comes closest to the reconstructed earliest stage of Franconian.

contours represent the nuclear accent syllables; the shaded parts indicate the overall structure of the post-nuclear contour towards the end of the phrase. Consider the declarative contours first: here, it proves difficult to discover any systematic similarity in the realization of the accents between the different dialect groups. Whereas Class 1 (the triplet on the top left) is realized with an early fall in Rule A, we find a nuclear rise plus a subsequent fall in Rule 0 and high pitch plus a late fall in Rule B. Similarly, the realizations of Class 2 (top right) differ tremendously between the different areas (high level pitch plus a late fall for Rule A, low level pitch plus a late rise for Rule 0, and an early fall for Rule B). Crucially, however, the interrogative contours resemble each other closely across the dialect groups: all dialect groups show relatively early rises in Class 1 (bottom left) vs. late rises in Class 2 (bottom right).

- (5) Prototypical realization of Class 1 and Class 2 in three dialect groups in declaratives and interrogatives, phrase-medial position; nuclear contour non-shaded, overall post-nuclear contour shaded

Accent class	Class 1			Class 2		
Dialect group	Rule A Cologne	Rule 0 Hasselt	Rule B Arzbach	Rule A Cologne	Rule 0 Hasselt	Rule B Arzbach
Declarative						
Interrogative						

My reconstruction of the original Franconian system builds upon this observation: I propose that the cross-dialectal similarity of the interrogative contours indicates that these contours are remnants of a common early stage of the dialects; they have not been subject to substantial phonetic/phonological changes. The dissimilarity between the declarative contours, on the other hand, is an indication that these contours developed in different ways over time. At the original stage of the opposition, the nuclear pitch accent was invariant across different pragmatic environments, and was realized with the rising nuclear contour L\*H and a subsequent fall. This melody marked focus rather than the illocutionary force, and therefore also did not differ systematically between declaratives and interrogatives. Possibly, some dialects may have made a phonetic contrast in the realizations, similar to e.g. some dialects of Swedish: [Gårding \(1975\)](#) has shown that in Swedish dialects with phonologically invariant contours in declaratives and interrogatives, questions can be signaled with relatively higher pitch peaks than those in statements – note, however, that such possible phonetic differences do not affect the proposed processes. Generally, it follows from these assumptions that Franconian dialects originally had a simple intonational system with only one nuclear contour marking focus, unlike many other modern West Germanic dialects, which have more complex sets of melodies signaling pragmatic information; we shall return to this issue in Section 3.6.

Of the three dialect areas under discussion, Hasselt (Rule 0) reflects this initial stage most faithfully: according to [Peters \(2006b, 2008\)](#), the dialect makes no intonational difference between declarative and interrogative phrases: the contours are realized with rising-falling intonation from the nuclear syllable onwards. I therefore regard Rule 0 as a relic area, displaying an early stage of the contrast; this may be corroborated by its peripheral location at the western border of the accent area. Phonetically, the idealized nuclear contours of this predecessor resemble those used for interrogatives in modern dialects; they are displayed in (6):

- (6) Idealized tonal contours of the predecessor of modern day Franconian dialects for declaratives and interrogatives

Class 1		Class 2	
$\mu$	$\mu$	$\mu$	$\mu$
L*	H	L*	H L
Nuclear $\sigma$	Post-nuclear	Nuclear $\sigma$	Post-nuclear

Relatively early rises in Class 1 syllables correspond to late rises in Class 2 words, which I represent as an association of L\* with the first mora of Class 1 (early rise) versus the second mora of Class 2 (late rise). After reaching a high target, the contours fell to low level, like in present day Hasselt. This final L can either be regarded as a low boundary tone that spread



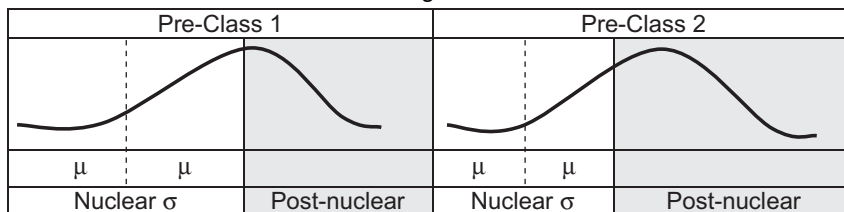
leftward from the right edge of the phrase, or, alternatively, a second trailing tone.<sup>9</sup> Certainly, there will have been some cross-dialectal phonetic variation in the realization of this contour, and some dialects will have aligned the tones slightly earlier or later than others: for instance, as can be deduced from (5), the interrogative rises in present day Hasselt (Rule O) start earlier than those in Cologne (Rule A) or Arzbach (Rule B).

Assuming an original alignment contrast between Class 1 and Class 2 for a rising-falling pitch contour is compatible with various existing proposals concerning the genesis of the opposition, viz. those that attribute the basic differences between Class 1 and Class 2 to original durational differences between the accent classes, in some contexts enhanced by the audibility of tonal contrasts on voiced consonants. This correlation was first suggested in Bach (1921); elaborate proposals along these lines can be found in Boersma (2006) and Schmidt (2002) – see also Schmidt and Künzel (2006), Kehrein (in press), Kingston (2011), yet see de Vaan (1999), Gussenhoven (2000b, 2004) for arguments against the durational approach.<sup>10</sup>

The assumption of original durational differences between the accents finds its origins in the present day lexical distribution, which is rather complex and elsewhere unattested. Roughly, the tenets can be summarized as follows: originally long West Germanic/Middle High German mid and low vowels always belong to Class 1, while Class 2 obligatorily contains all long high vowels/closing diphthongs/short vowels that were not followed by a voiced intervocalic consonant. Long high vowels, diphthongs, and short vowels before an originally voiced intervocalic consonant tend to belong to Class 1; yet the details of their distribution vary, as effects of vowel lengthening (Open Syllable Lengthening, Analogical Lengthening) and apocope have been incorporated in different ways across different dialect areas (see Boersma, 2006; Köhnlein, 2011; Kehrein, in press for overviews of the lexical distributions in different dialect areas). In sum, this distribution led the abovementioned scholars to propose that modern reflexes of Class 1 correspond to vowels and phoneme groups that are intrinsically longer than those correlating with Class 2 and/or had more audible pitch movements.

In these approaches, a durational contrast between old long mid and low monophthongs versus the rest of the distribution is commonly assumed to be the first stage of the opposition (Schmidt, 2002:229 refers to this difference as the *pretonemic stage* of the accent opposition). As modern Class 1 largely correlates with earlier tonal movements than Class 2, the durational differences between these vowel groups must have led to earlier/more prominent movements on longer Pre-Class 1 vowels than on shorter Pre-Class 2 vowels. There are different ways to incorporate this shared insight into a model of the accent genesis. For the purposes of this paper, we can assume that the pitch rise started approximately at the same time. Due to their greater duration, Pre-Class 1 movements reached the high pitch target relatively early while it occurred later in Pre-Class 2; approximate realizations are given in (7). It may certainly be the case that the exact peak timing varied across dialects, or that the durational differences/pitch differences were bigger than indicated here, as assumed in the proposals by Schmidt (2002), Boersma (2006), and Kehrein (in press).<sup>11</sup>

(7) Idealized tonal contours before accent genesis in Franconian



The column representing the nuclear syllable is wider for Pre-Class 1 than for Pre-Class 2, representing its relatively longer duration. When this difference was phonologized, the contrast between the contours was extended. Resulting

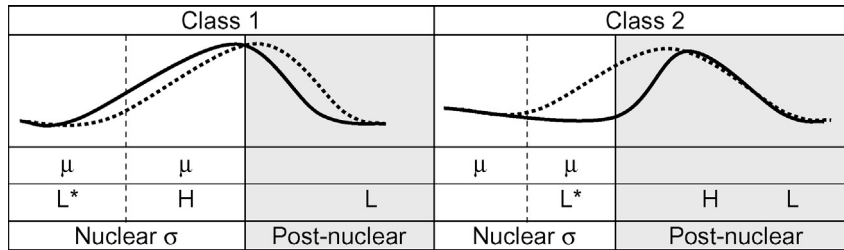
<sup>9</sup> Some modern dialects, as e.g. Hasselt, use high boundary tones (instead of low ones) to mark continuative intonation; such a difference may or may not have been present in the original system. Yet the nuclear contours are similar, thus an early rise vs. a late rise.

<sup>10</sup> Note, however, that the original contours proposed here are less compatible with a second type of approach, namely scenarios that attribute large aspects of the present day lexical distribution to differences in intrinsic pitch height. Under this idea, later Class 2 syllables were realized with higher syllable-final pitch than Class 1 syllables: in Kortlandt (2007), this is the cause of the genesis; in Gussenhoven (2004:232), such effects lead to the lexical distribution of the accents, while the genesis itself is attributed to a process of 'fake analogical lengthening' (Gussenhoven, 2000b). For discussions of Gussenhoven's approach, see Boersma (2006), de Vaan (2010), Schmidt (2002), and Werth (2011). Some critical aspects pointed out in Boersma (2006) can also be brought in against Kortlandt's scenario (yet see de Vaan, 2010 in defense of the proposal). When implemented into my account, the notion of intrinsic pitch height would predict early rises for Class 2 and late rises for Class 1, counter to the facts.

<sup>11</sup> I represent the original contours with two moras for both accent classes; Boersma (2006) regards the very first stage of the opposition to be an allophonic contrast of long bimoraic non-high vowels (Class 1) versus all other vowels (Class 2); the latter were monomoraic at first, and a reinterpretation of Class 2 as being bimoraic occurred at a later stage. A related approach can be found in Kehrein (in press).

Class 1 contours had earlier rises (L\*H in the accent syllable) than Class 2 (only L\* in the accent syllable, H post-nuclear); the process led to the contours given in (8), represented with solid lines<sup>12</sup>:

(8) Tonal contours after accent genesis in Franconian



### 3.2. The markedness of the predecessor's contours as a trigger of tone-prominence optimization (TPO)

As argued in Section 3.1, the reconstructed common predecessor of modern Franconian dialects had the same nuclear contours throughout all pragmatic environments – an early nuclear rise in Class 1 syllables as opposed to a late rise in Class 2 syllables. From a cross-linguistic perspective, rising contours in nuclear syllables are common in interrogatives; in declaratives, however, rises are generally considered to be marked (see e.g. Bolinger, 1978; Gussenhoven, 2002, 2004; Hermann, 1942), with rare exceptions to the patterns (see Gussenhoven, 2002, 2004; Ladd, 1981).<sup>13</sup> Experimental evidence for the universality of associating late peaks with questions can be found in Gussenhoven and Chen (2000). Certainly, nuclear rises in declaratives are a marked feature in West Germanic, where we usually find falling (H\*L) or high level (H\*) nuclear pitch accents under declarative intonation (see Gilles, 2005; Peters, 2006c for overviews). While rises are largely avoided in West Germanic declaratives, note that there still are several systems that use rising pitch accents in this pragmatic environment: some well-established cases are Belfast English (Cruttenden and Jarman, 1976; Grabe and Post, 2002; Grabe et al., 2005), Birmingham English (Brown et al., 1980), Liverpool English (Knowles, 1975), and several varieties of Southern German, as first noted by Sievers (1912) – examples are Swabian (Kügler, 2007) and Alemannic German (Gilles, 2005; Peters, 2006c, 2008; Werth, ms.); thus, while systems such as the one I describe for Franconian certainly display marked declarative melodies, such melodies are not unattested elsewhere in the West Germanic territory.

Particularly the Class 2 contours of the predecessor were marked in another way as well: as shown in (6), they had a late, post-nuclear rise, which violates the well-established cross-linguistic tendency to associate syllables with high prominence (here: nuclear syllables) with high tone, and non-prominent syllables with low tone (see de Lacy, 2002; Kuo et al., 2007; Yip, 2002, 2007). Once more, such marked realizations are in line with pitch contours commonly used to signal interrogatives; yet they result in a marked intonation in declarative phrases, which can be considered as an unmarked pragmatic context. Therefore, declaratives ideally require to be realized with unmarked tonal prominence, that is, with high tone, unlike the low-toned Class 2. Similarly, the Class 1 rise was marked as well (due to L\*), but it may be considered less marked than that of Class 2 since the rise started earlier and reached a high pitch level within the nuclear syllable.

Combining these considerations, we can identify three different *degrees of markedness* (DOM) concerning the tone-prominence relation for declarative contours in the nuclear syllable: late low targets, as in Class 2 of the reconstructed predecessor, are highly marked (DOM 2), since the accented syllable is low-toned throughout (L) and followed by a late or post-nuclear rise (post-nuclear H). Class 1 of the predecessor was less marked: it had a marked low rise, yet this rise started early in the syllable, and a high pitch level was reached within the nuclear syllable (LH, DOM 1). An unmarked declarative intonation (DOM 0), then, is characterized by a falling tone (HL) or a high level tone (H) in the nuclear syllable. The requirement for DOM 0 is that the first tone in a nuclear syllable be high in an unmarked context, as in declarative phrases. In intonational languages, this will usually correspond to a starred high tone (H\*).<sup>14</sup> An idealized version of the resulting hierarchy is provided in (9) for a melody LHL, from marked to unmarked; tones in the nuclear syllable are given in brackets. Pre-nuclear tones precede the bracket; post-nuclear tones are to the right of the bracket:

<sup>12</sup> Unlike in the proposed original stage of duration-based models, modern reflexes of Class 1 are usually phonetically *shorter* than Class 2, which has been attributed to diachronic shortening of Class 1 and lengthening of Class 2 under the influence of the diverse pitch melodies: these processes are discussed and phonetically motivated in Boersma (2006) and Werth (2011); see also Schmidt (2002).

<sup>13</sup> It is, however, much less uncommon to mark questions with falling contours (see Gussenhoven, 2002, 2004; Ladd, 1981 as well as Rialland, 2007, in particular).

<sup>14</sup> For now, I leave open the question as to whether there is a markedness difference between a high level tone and a falling tone in the nuclear syllable (both are labeled as DOM 0). Note, however, that for the purposes of this paper, the crucial aspect is that in both contours, the first tonal target in the nuclear syllable is high. Therefore, the differentiation is sufficient for the purposes at hand.



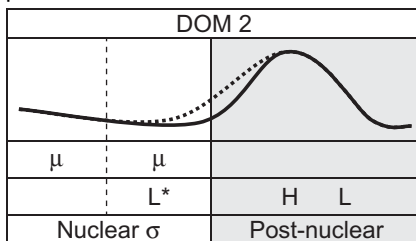
- (9) Markedness hierarchy for tonal contours; nuclear syllable in brackets  
 Dom 2: [L\*]HL >> DOM 1: [L\*H]L >> DOM 0: L[H\*]L, L[H\*L]

These three degrees of markedness are repeated in (10), together with idealized contours that give some indication of possible realizational variation, without claiming to be comprehensive: while I generally regard the DOM as a categorical measure, gradience and variation are important factors in the language- and dialect-specific synchronic phonetic implementation of pitch accents, as well as in diachronic transitions between different tonal contours.<sup>15</sup>

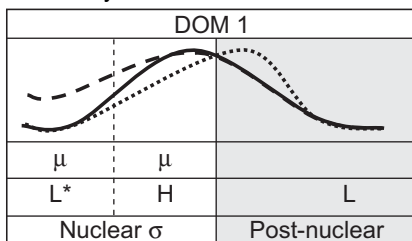
For instance, a late aligned L\*, which I regard as most marked (DOM 2), may be realized somewhat earlier or later in a syllable, as indicated in (10a). In a DOM 1 syllable with an early rise (10b), the timing of a following high target may vary due to articulatory reasons, such as the time span needed to produce a rising contour, which can lead to a phonetically delayed peak (dotted line) – such delays are particularly common in rising contours, as shown in e.g. Xu (1999); see Section 3.2 for further discussion of peak delay. Moreover, an initial low tone may be phonetically raised under stress/focus, as well as in anticipation of a following high tone (dashed line); see Section 3.4 for further discussion.

Lastly, (10c) shows two possible realizations that I classify as unmarked (DOM 0): the contours on the left indicate that the phonetic peak of a H\* need not necessarily be reached at the beginning of a high-toned syllable – realizations as mid rises are common (dotted line; see also Section 3.3); the falling contours on the right indicate once more that the alignment of a tonal target can be variable. The prominence difference between DOM 1 and DOM 0 may find experimental support in Knight (2008), at least concerning the difference between rising-falling contours, as in (10b), versus high level plateaux with a late fall, as in (10c, left side): her perception tests show that listeners perceive plateaux as higher in pitch and more prominent than late sharp peaks of rising contours.

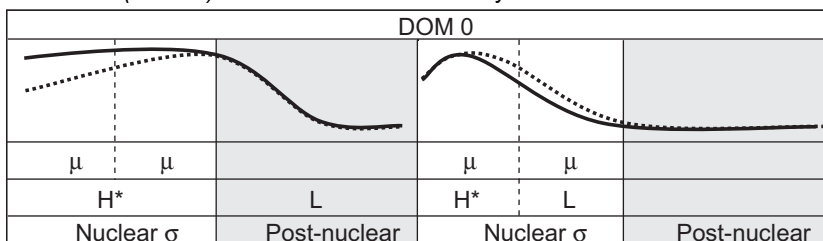
- (10) a. *Highly marked (DOM 2)*: first tone in the nuclear syllable is a late aligned L, followed by a rise to a post-nuclear H



- b. *Marked (DOM 1)*: first tone in the nuclear syllable is an early aligned L, followed by an early rise in the nuclear syllable



- c. *Unmarked (DOM 0)*: first tone in the nuclear syllable is H\*



<sup>15</sup> As noted by Bruce (2005:417) with respect to such issues, “exactly how we should interpret the relationship between phonological representation and phonetic actualization is still an open question.”

As I shall argue in the following sections, both Rule A and Rule B gave up the rising nuclear contours of the predecessor system (L\*H) in declarative contexts in favor of an unmarked realization with a H\*. The trigger for this process is an optimization of the relation between tone and prominence (TPO): in the case discussed here, the principle requires a nuclear syllable in declaratives to be realized with an unmarked tonal contour. Both contours of the predecessor were subject to TPO: Class 1 had DOM 1, and Class 2 had DOM 2. As we shall see, after the adjustments Rule A and Rule B underwent, the DOM was reduced to zero for both accents in the dialect areas: the realizations were in line with the prototypical declaratives contours in (10c). As discussed in the following subsections, the reversed tonal contours between Rule A and Rule B can be attributed to diverse optimization strategies, a leftward shift in Rule A versus vertical adjustments, most importantly syllable-initial pitch raising, in Rule B. Interrogatives, on the other hand, did not participate in the process, since the rising contours of the predecessor were unmarked in this pragmatic context.

### 3.3. The split between Rule A and Rule B, part I: the development towards Rule A

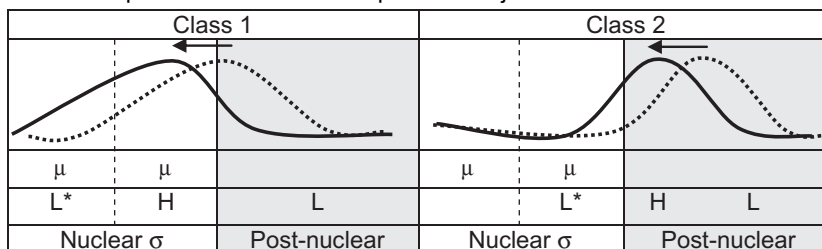
This section discusses the development from the predecessor towards Rule A, which is regarded as a change in the timing of the sentence intonation in declarative contexts: a leftward shift of the pitch contour, leading from a marked L\*HL contour to an unmarked LH\*L. Synchronically, diachronic stages of the development towards Rule A have left traces in modern dialects.

#### 3.3.1. The development towards Rule A: phonetic adjustments

In a TPO-induced process towards a reduction of the tonal markedness in declaratives, speakers of later Rule A shifted pitch contours leftward in declarative contexts. At first, the retraction may have progressed as far as possible when only affecting the phonetic implementation of the new declarative melody but not its phonological representation: since the starred tone of an intonational melody is phonologically aligned with the nuclear syllable (see above, Section 2), the L\* was realized immediately at the left edge of the syllable in Class 1. In other words, the high tone was shifted as far to the left as possible while retaining the phonological representation of the declarative melody. In Class 2, pitch was shifted leftward as well while retaining the contrast between the two accents (a similar contrast preservation can be observed in Scandinavian accent dialects; see Section 4.1). The process is illustrated in (11); the dotted lines represent the original contours, and the solid lines show the contours after the shift.

The shifted contours phonetically resemble those we find in present day Hasselt: as indicated in Section 3.1, Rule 0 rises are aligned phonetically earlier than those in present day Rule A. It cannot be determined with certainty whether Rule 0 reflects the original contours with a relatively early alignment of the contours in comparison to other dialects, or whether it may display an intermediate stage in the development from the predecessor to Rule A. Recall that the data given in Peters (2006b, 2008) do not indicate that the present day Hasselt system displays an alignment contrast between declaratives and interrogatives; this may indeed suggest that Hasselt (Rule 0) has retained its original contours. Alternatively, one could argue that, after an emerging contrast between declaratives and interrogatives was not phonologized, the two contours merged again. In any case, if Hasselt should display an intermediate stage in the development towards Rule A, this development stopped at an early stage.

#### (11) The development towards Rule A: phonetic adjustments

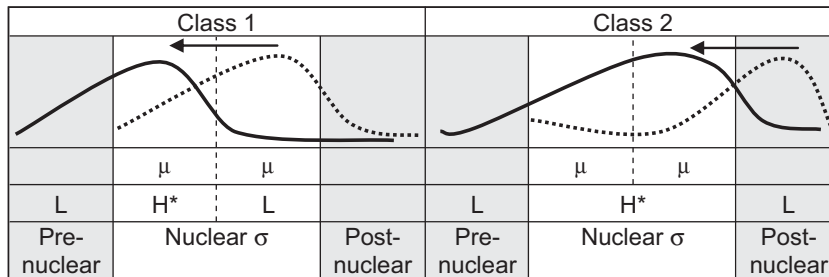


#### 3.3.2. The development towards Rule A: phonological reinterpretation

Modern Rule A dialects changed the tonal melody in declaratives from L\*HL to LH\*L. This can be attributed to a phonological reinterpretation of the relevant pitch contour in line with TPO: as argued above, the L\* was phonetically located leftmost in the accent syllable at some point of the development towards Rule A. Assuming some amount of phonetic variation, it may have sometimes been realized shortly before the accent syllable: we still find such phonetically early realizations for Class 1 in the Hasselt dialect (Peters, 2008), and similar early aligned contours have also been

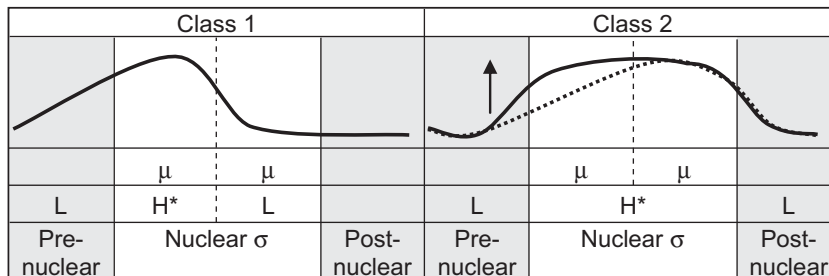
reported for pre-nuclear rises in English (Atterer and Ladd, 2004). This variation promoted the development of an unmarked nuclear declarative contour: a new generation of learners analyzed the L\* as a pre-focal low tone, and the former high trailing tone as H\*, following universal tendencies. The tonal contours of the accents were adapted accordingly; as a result of the adjustment, the DOM in both accent classes was reduced to zero, and the contours became unmarked<sup>16</sup>.

(12) The development towards Rule A: re-interpretation of a L\*HL declarative melody as LH\*L



While modern realizations of the falling Class 1 contours are largely invariant across Rule A dialects, some dialects adjusted the Class 2 contours; the realization displayed in (12), a continuous rise from a pre-nuclear L towards a high target in the nuclear syllable can still be found in e.g. Roermond (Gussenhoven, 2000a:137), or Sittard (Hanssen, 2005:80). Other dialects, however, raised pitch to a high level plateau (e.g. Cologne; Peters, 2006a:25): in these dialects, the peak in the nuclear syllable is reached at approximately the same point for both accent classes; yet the pitch fall occurs earlier in Class 1 than in Class 2. The process is illustrated in (13); the dotted line shows the contour before the adjustment, the solid line represents the realization in present day Cologne.

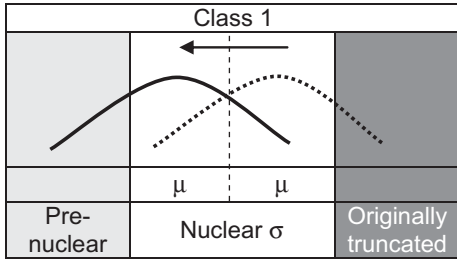
(13) Variation in the realization of Class 2 in Rule A: optional pitch raising at the beginning of the accent syllable



Let us now turn to phrase-final positions: in declaratives, Class 1 is realized as a falling contour cross-dialectally, similar to medial position. This contour can be derived in a straightforward manner: when the sentence intonation was shifted leftward and the L\*HL melody was reinterpreted as LH\*L, the pitch target of the high tone was retracted to the beginning of the nuclear syllable. This created more phonetic space for the following low tone, thereby extending a formerly truncated and thus inaudible final fall. We still find such truncated final falls in the interrogative intonation of some Rule A dialects; based on data from the Mayen dialect, Künzel and Schmidt (2001) name the phenomenon *epitone* (see also Gussenhoven, 2000b; Werth, 2011). The shifting process is visualized in (14); the dark grey area shows the part of the tonal melody that was truncated before the leftward shift:

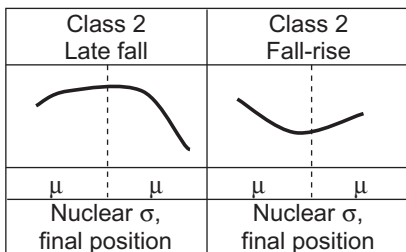
<sup>16</sup> An anonymous reviewer points out that the leftward shift may have led to confusion between Class 2 declarative contours of an older generation and novel Class 1 interrogative contours of a new generation. It seems likely to assume that the shift did not occur in one go but progressed in a phonetically gradient way over time; thus, it is not certain whether it proceeded at a speed that such a problem may have arisen in first place. Yet I believe that, even if such a situation should have emerged, this would not necessarily have to affect the change in progress at all. To briefly put the issue into a broader context, recent perception tests by Labov and co-workers have shown that vowel shifts in American dialects can lead to wrong identifications of minimal pairs, not only across dialects but also among speakers of the same dialect. Still, the changes seem to be affected surprisingly little by such potential functional problems (see Labov, 2010 for results and detailed discussion).

(14) Class 1 in phrase-final declaratives, Rule A



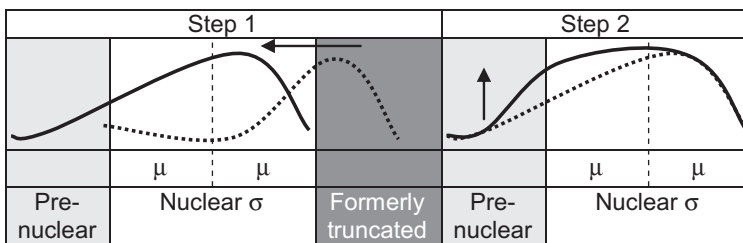
For Class 2, Rule A displays two basic realizations across dialects, one with a high level tone and a late fall (e.g. Cologne) versus one with a fall-rise (e.g. Roermond):

(15) Synchronic variants of realizing Class 2 in phrase-final declaratives, Rule A



In reconstructions of the contrast, the high level realization of Class 2 in Rule A declaratives is commonly regarded as the original one (e.g. Boersma, 2006; Gussenhoven, 2000b, 2004; Schmidt, 2002; de Vaan, 1999; Werth, 2011), which would make the fall-rise an innovation. I adopt this view and assume that the late fall is the variant that was produced at the time when the changes discussed in this paper took place. As already argued for Class 1, the leftward shift of the pitch contour provided more phonetic space at the right edge of the phrase – as a consequence, the formerly truncated low trailing tone could be phonetically expressed as a late fall, shown in the left contour in (16); above, I have argued that the initial raising of pitch (Step 2, right contour) is a later development in dialects of the Cologne type.

(16) The development from the predecessor towards Rule A, Class 2, phrase-final declaratives, Cologne system



In sum, it has been demonstrated that a leftward shift of pitch contours in declaratives can account for the proposed split between declarative intonation and interrogative intonation in Rule A. Before moving on to Rule B, I would like discuss two basic aspects of the scenario in some more detail. This concerns (a) the general linguistic plausibility of diachronic leftward shifts of pitch, and (b) the likelihood that phonologically identical intonational melodies can split.

With respect to (a), the proposed contour retraction is more or less the opposite of the widely recognized *peak delay*, a well-documented principle of tonal behavior. The notion refers to the tendency for high tones to be realized relatively late on a tone-bearing unit, or even after it; the phenomenon is ubiquitous in overview literature on tone and intonation (e.g. Gussenhoven, 2004; Hyman, 1978, 2007; Hyman and Schuh, 1974; Ladd, 2008; Yip, 2002). Pitch retraction, however, is discussed in the literature to a much lesser degree (for instance, it is absent in relevant textbooks such as Gussenhoven, 2004; Ladd, 2008; Yip, 2002). Proposing a retraction process for Franconian Rule A does therefore not seem trivial. Note also that the debate on whether retraction is a natural tonal process features prominently in ongoing discussions on the development towards modern dialect groups in Scandinavian and Japanese accent systems (for Scandinavian, see e.g.

Riad, 1996, 1998, 2000, 2003 as a proponent of leftward shifts vs. Bye, 2004, 2007, 2011; for Japanese, see de Boer, 2005, 2010; Ramsey, 1979 for retraction scenarios vs. e.g. Kindaichi, 1937; Matsumori, 1993, 2008, or Shimabukuro, 2002); in Section 4.1, we will return to the Scandinavian situation.

Yet there seems to be sufficient evidence indicating that retraction of tones is a natural tonal process: a paper by Schadeberg (1977) summarizes various attested cases from several Bantu languages. Hyman (2007) mentions additional data, also from European accent languages, viz. a pitch accent retraction in Basque dialects (see Hualde, 2000, 2003) and a peak retraction under narrow focus in Serbo-Croatian (Smiljanić, 2003); Smiljanić herself reports similar cases from Spanish and Greek (Botinis, 1998; Face, 2002; de la Mota, 1997).

More instances can be found in other accent languages from diverse language families: in Section 4.2, I will discuss a TPO-induced retraction of a pitch contour in Štokavian dialects of Serbo-Croatian. Furthermore, several other diachronic scenarios involving peak retraction have been put forward to account for historical developments in Balto-Slavic languages, such as that of the ‘neoacute’: in Late Common Slavic, pitch peaks were retracted from syllables with high, lax vowels (jers) to preceding syllables, as first argued in Stang (1957); see Bethin (1998) for a concise overview. Another potential – albeit more debated – example is Pedersen’s Law, which describes a peak/ accent retraction by one syllable from word-medial short open syllables, as first discussed in de Saussure (1896).<sup>17</sup> Moreover, among Korean dialects that have retained the pitch accent opposition inherited from Middle Korean, dialects of the Kyongsang type realize pitch accents one syllable further to the left than Hamgyong dialects. As the accent locations in Hamgyong dialects resemble those of the Middle Korean system, this difference is best understood as a leftward shift of the accent to the preceding syllable in Kyongsang dialects (Lee and Ramsey, 2011; Ramsey, 1979).

These data indicate that peak/pitch retraction is to be regarded as a natural process in languages; quite possibly, it is more likely to occur in accentual/stress languages than in more complex tonal systems, as suggested by Hyman (1978:264, see also Hyman, 2007).<sup>18</sup> Note, however, that already Schadeberg (1977:196) doubts the universality of the correlation. In any case, the relevant data as well as Hyman’s observation are perfectly in line with the retraction scenario proposed for the development towards Rule A.

The second assumption to be addressed concerns the proposed diachronic split of one nuclear contour into two in Franconian, one for declarative and one for interrogative intonation. In our case, this implies that originally similar intonational melodies can have different phonetic implementations in diverse pragmatic environments, which would be the initial condition for a possible phonological reinterpretation as two pragmatically distinct contours. There is external evidence indicating that phonetic alignment differences like those proposed in the development towards Rule A are well-attested intonational phenomena: as summarized in Gussenhoven (2002, 2004), there are several instances in the world’s languages where declarative intonation and interrogative intonation are only based on relatively subtle phonetic differences in the alignment of pitch peaks. While such differences are well-studied for Southern Italian varieties (Grice, 1995; d’Imperio, 1997; d’Imperio and House, 1997) and have also been claimed to be relevant for speakers of Swedish (House, 2003), the most closely related case comes from Standard Dutch: Heuven and Haan (2002) have shown that declarative peaks are realized 40 ms earlier than interrogative peaks, an effect that, according to Gussenhoven (2004:91), is “almost certainly phonetic”.<sup>19</sup>

### 3.4. The split between Rule A and Rule B, part II: the development towards Rule B

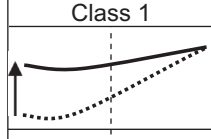
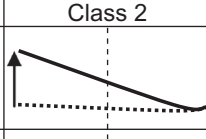
Like Rule A, Rule B dismissed the low rise in the nuclear contours of the predecessor in declarative contexts, in favor of an unmarked tonal contour with a high tone as the first tonal target in the nuclear syllable. Yet instead of shifting the sentence intonation leftward, Rule B raised the pitch at the beginning of the nuclear syllable, a probably gradient phonetic adjustment that eventually led to a reinterpretation of the tonal melodies in the nuclear syllable:

<sup>17</sup> There is no consensus among Balto-Slavists on the status of the law. While e.g. Hjelmslev (1932), Pedersen (1933) and Rasmussen (1993) regarded it as a (regular) sound change, scholars such as Kortlandt (e.g. 1975, 2005) and Stang (1957) have dismissed this idea and attribute the law largely to analogical principles (but see Kortlandt, 2006 for an adapted view); Olander (2009) rejects the law altogether. Further distributional arguments in favor of regarding the law as a sound change have been brought forward by Jasanoff (2008, 2011).

<sup>18</sup> An anonymous reviewer points out that the likelihood for (phonetic) peak retraction also interacts with the position of a pitch accent in a phrase; while pitch accents phrase-initial words tend to have delayed peaks, peak retraction from a word-final to a penultimate syllable is more common in phrase-final position.

<sup>19</sup> Other related phenomena can be found in Chinese and Swedish: as Duanmu (2000) and Shen (1990) show, questions are pronounced with higher pitch than statements in Standard Chinese. In Swedish, final falls in declaratives tend to be realized more strongly and/or with lower pitch than final falls in interrogatives while not being phonologically different (Gussenhoven, 2004). Furthermore, as already mentioned in Section 3.1, Gårding (1975) demonstrates that in Swedish, pitch peaks tend to be higher in questions than in statements.

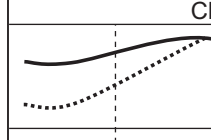
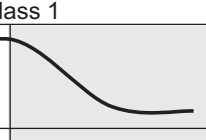
## (17) The development from the predecessor towards Rule B (nuclear syllable)

Class 1		Class 2	
			
μ	μ	μ	μ
H*		H*	L
Nuclear σ		Nuclear σ	

In Class 1, where the first mora of the nuclear syllable was aligned with a low tone in the predecessor system, the L was raised to H, and the contour in the accent syllable was reinterpreted as a high level tone (H\*) instead of L\*H. In Class 2, where the predecessor system had a low tonal target on the second mora, pitch was raised to H on the toneless first mora, leading from a late aligned L\* to H\*L. While in both cases, the change was triggered by TPO, it seems worthwhile to point out that when considered in isolation, both the adjustment in Class 1 as well as that in Class 2 are common processes: as discussed in relevant surveys by e.g. Hyman (1973, 2007), Hyman and Schuh (1974), or Schadeberg (1977), low pitch targets can be raised in anticipation of following high tones, which corresponds to the pitch raising in Class 1. What concerns the development towards Class 2, note that low tonal targets are often preceded by falling pitch, presumably to enhance the presence of a low tone – the process has been referred to as *dipping* (see e.g. Gussenhoven, 2004, 2007; Kristoffersen, 2007; Peters, 2007 for relevant data and discussion). Gussenhoven (2007:266) points out that “[dipping] may lead to the introduction of a H-tone in the representation”, which is in line with the proposed development for Class 2, leading from a late aligned low tone to a fall in the nuclear syllable.

When taking the whole sentence intonation into account, however, it becomes clear that one more adjustment must have occurred; the original post-nuclear high pitch target in Class 2 words has disappeared in modern Rule B systems, as shown in (17, right side); for this discussion, I will refer to this synchronically unattested two-peaked realization of Class 2 as Rule B\*.

## (18) The development from the predecessor towards Rule B (post-nuclear)

Class 1		Class 2	
			
μ	μ	μ	μ
H*	L	H*	L
Nuclear σ	Post-nuclear	Nuclear σ	Post-nuclear

Rule B speakers must have given up the two-peaked accent in Class 2 either due to natural phonetic tendencies, or due to its pragmatically marked status, or a combination thereof. What concerns pragmatic markedness, the fall in the nuclear syllable served as an indicator of prominence typical for declarative intonation (an unmarked H\*L), yet having a strong post-nuclear rise may still have been connected with interrogativity. When such HLH-contours arise in varieties of German, it is typically the result of a H\*L pitch accent followed by a high phrase-final boundary tone, and it does not signal a ‘default’ declarative contour (see Gilles, 2005; Peters, 2006c).

From a more general perspective, the proposed lowering of the second peak is in line with the widely reported effect of *tone terracing*, an instance of *tonal downstep*: it refers to processes where a H is realized with lower pitch than a preceding H after an intervening L (first reported in Welmers, 1959; see also e.g. Connell, 2001; Ladd, 1984; Stewart, 1965). Crucially, it can lead to what Meeussen (1970) has named *total downstep*: the pitch of a downstepped H can be lowered to such a degree that it is auditorily indistinguishable from a low tone. This effect has been attested for tonal languages (see e.g. Anderson, 1998; Clements and Ford, 1979; Stewart, 1993), pitch accent languages (e.g. Japanese; Uechi, 1998) as well as for purely intonational languages, among which Standard German: as Grabe (1998) argues, Standard German shows downstep of high tones, which can vary between partial and total downstep. As pointed out in Féry (1993), German speakers often avoid pronouncing the second high tone in phrase-final syllables with H\*LH%; it is regularly truncated. The abovementioned facts thus illustrate (a) the general pragmatic markedness of HLH sequences in West Germanic, especially in declaratives, as well as (b) the frequently occurring (total) downstep of high targets after a preceding HL-sequence; eliminating the second peak in Class 2 declaratives thus eliminated a



marked contour in Rule B.<sup>20</sup> Since the proposed adjustments for Rule B are vertical rather than horizontal, they are expected to lead to comparable nuclear contours in non-final and final position of declaratives. Indeed, this is what we find in the synchronic system: a high level tone with an optional late fall for Class 2 is opposed to an early fall for Class 1; see (3) for idealized contours, and Köhnlein (2011:47–49) for a more detailed discussion.

As to how the change from the predecessor to Rule B\* and Rule B proceeded, there seem to be two possible alternatives: the initial pitch raising in the two accent classes may have occurred first, and the lowering of the second H in Class 2 could have been a subsequent step. Alternatively, it may be the case that raising and lowering in Class 2 occurred simultaneously, in a sense that the higher the initial peak was realized, the lower the second one became. While this decision cannot be made on the basis of the synchronic data for Rule B, external evidence suggests that the latter scenario may be favorable: for instance, Meyer (1937) observes a similar ‘trade off’ in peak height for two-peaked realizations in Central Swedish dialects, which provides additional evidence in favor of my proposal (see Section 4.1 for further discussion).

Furthermore, the Franconian dialect of Borgloon may give an indication of how the phonetic relation between two pitch peaks may vary: as shown in Peters (2007:179), the Borgloon dialect shows an unusual variability in its tonal melodies, as it has four alternative realizations of Class 2 in phrase-final position, independent of pragmatic environment; they are displayed in (19). Geographically, as well as regarding the Borgloon accent system as a whole, the dialect is closely related to Hasselt, and belongs to Rule 0. Therefore, it seems reasonable to assume that (19a), which closely resembles the Hasselt Class 2 contour, is the most conservative realization. (19b) shows a slight initial pitch raise and a relatively higher second peak: the late aligned low tone is slightly enhanced by falling pitch (Gussenhoven, 2007:266 interprets this contour in a similar way). In (19c), the initial pitch target is raised even further, and the second peak decreases. Finally, (19d) shows a realization where the second high pitch target has disappeared completely, and a realization as a fall to mid remains.



When comparing (19b) to (19c), we see what looks like a negative correlation between the height of the first peak and that of the second one: stronger pitch raising at the beginning of the accent syllable seems to induce lowering of the second peak. Also, a comparison of (19a) and (19d) to the Borgloon realization of Class 1 in (20) indicates that there seems to be an optional reversal of the peak location: the Class 2 peak in (19a) occurs later than that of Class 1, yet the Class 2 peak in (19d) is earlier than that of Class 1.



This is not meant to imply that Borgloon represents an intermediate stage of a change towards a dialect of the Rule B type. At this point the variation in Class 2 seems to be too large to draw any conclusions about how the system may develop. Furthermore, at least at the moment, the reversal is restricted to phrase-final position, and Class 1 does not seem to show relevant realizational variation so far. Thus, while this change indeed shows similarities to the proposed developments from hypothetical Rule B\* towards Rule B, this example primarily serves to illustrate how the pitch height of an early first peak can influence that of a late second one.

In sum, we can conclude that the proposed change from the predecessor towards Rule B was triggered by pitch raising at the beginning of the accented syllables in both accent classes. Additionally, in Class 2, a former trailing high tone was downstepped and eventually deleted, possibly in a trade off in pitch height with the newly introduced initial H\*. The nuclear declarative contours that were created during this process are retained in the synchronic Rule B system – a high level tone with a late fall for Class 1 versus an early fall for Class 2. Rule Reversal was born: whereas the leftward shifting in Rule A created falling tones for Class 1 and high level tones for Class 2 (see above, Section 3.3), the syllable-initial pitch raising in Rule B led to opposite tonal melodies in the accent syllables.<sup>21</sup>

<sup>20</sup> Certainly, this is not meant to imply that such contours are generally prohibited. For instance, a fall-rise is a widespread realization of Accent 2 in Scandinavian (to be discussed in Section 4.1); furthermore, as has been discussed in Section 3.3, is one possible realization of Class 2 in phrase-final Rule A declaratives.

<sup>21</sup> Note also that, unlike it is usually the case for Rule A dialects, the present day Arzbach system does not feature pre-nuclear low tones in declaratives (see Köhnlein, 2011 for relevant data). This can be attributed to the difference between the leftward shift in Rule A ( $L^*HL \rightarrow LH^*L$ ) versus the vertical adjustments in Rule B: the latter eventually resulted in a  $H^*L$  melody rather than  $LH^*L$ , as no low tone was shifted leftward – this may offer an explanation for the absence of a pre-focal L in Arzbach.

### 3.5. *The geographical distribution of the changes*

Given the available data on Franconian, it is not possible to determine with certainty where the developments may have started and how they spread across the tone accent area; still, some suggestions are possible, yet they will remain tentative: the development towards Rule A may have started out from Cologne, which is located in the heart of the present day Rule A area. From this center of religious and economic life, the new contrast could spread across the later Rule A area; yet the innovation did not reach the Western fringes of the area, which remained archaic (Rule 0). The question why Rule B created reversed declarative contours as opposed to Rule A might be related to the fact that the Rhine separates the two areas. It seems likely that there was not always regular contact between later Rule A and Rule B: in the course of time, the river has often been a strong structural border between the Westerwald (Rule B) and the area to the left of the Rhine (Rule A). Furthermore, from the Middle Ages onwards, there have been several changes concerning the authority in the Westerwald area (see Gensicke, 1958 for an elaborate history of the region), and the relationship with neighboring areas was not always friendly. The reversal may thus have occurred in one of the sometimes extended periods with lack of direct contact to (later) Rule A dialects.

### 3.6. *Intonational simplicity in the original Franconian system: a remark*

A basic assumption for my explanation of the reversal between Rule A and Rule B in Franconian is a historical split of one pragmatically invariant nuclear contour into distinct ones for declarative and interrogative intonation. In that sense, the original Franconian situation would have been similar to that of e.g. the Scandinavian tone accent systems, where it has often been claimed that the realization of the tonal melodies does not largely vary under different pragmatic conditions (see e.g. Gårding, 1975; Bruce, 1977, 2005). In this context, as pointed out in two anonymous reviews, the question may arise whether it is plausible to assume that Franconian originally had a simple intonation system while most contemporary German and Dutch varieties have rich ones.

It is undoubted that many Franconian dialects often have poorer sets of intonational melodies than most other present day varieties of West Germanic; the issue is whether this is primarily a consequence of a loss of melodies or an indication that new melodies are acquired more reluctantly than in non-accent dialects. To my knowledge, Gussenhoven (2004:228) has first explicitly pointed out a possible correlation: he states that “[i]nvariably, the more intonation contrasts a language has, the harder it is to maintain a lexical contrast, and vice versa. [A tone accent] language is likely to respond to this situation by reducing the number of intonation contours.”

While Gussenhoven points out that introducing a lexical accent contrast in a language with rich intonation systems “should be problematic” (Gussenhoven, 2004:228), he defends the idea that the intonational system of Franconian was complex when the accent contrast was introduced, and that later intonational contours were abandoned due to accent contrast preservation. Contrarily, under the scenario sketched above, Franconian systems were simple when the tone accents emerged, and varieties like Rule A and Rule B became more complex at later stages.

While many Franconian dialects are melodically simple, there is in fact evidence indicating that at least some dialects have adopted Standard Dutch or Standard German intonational melodies without giving up the accent contrast. Such cases have been reported by e.g. Fournier (2008), Gussenhoven and van der Vliet (1999) for Venlo, Hanssen (2005) for Sittard, Peters (2006a) for Cologne, and Gussenhoven and Van den Beuken (2012) for Helden. These facts are at least not trivial under the assumption that accent languages will give up intonational melodies to maintain the lexical contrast while it is perfectly in line with the scenario sketched in this paper. At the same time, I am not aware that neutralizations of intonational contrasts in Franconian dialects have been reported so far. This is of course no evidence that such processes do not exist; yet it shows at least that while a potential increase in the set of intonational melodies is attested, any assumptions concerning the loss of intonational contrasts can so far not be based on facts.

Particularly in the absence of empirical evidence indicating that Franconian intonational systems tend to lose intonational contrasts, I see no a priori reason to dismiss the idea that the original nuclear contours were simple in the sense that the nuclear pitch accent was marking focus only, and that more complex melodies in different pragmatic contexts are the result of later acquisitions. Notably, the Scandinavian tone accents are traditionally assumed to derive from a system with one intonational melody marking stress/focus rather than illocutionary force, which is reflected in at least many modern systems – thus, there is no evidence indicating that Scandinavian had complex intonational melodies before it developed into a tone accent system. As both Franconian and Scandinavian derive from a common ancestor, this may support the idea that there have been (and there still are) Germanic dialects with pragmatically simple intonation systems.<sup>22</sup>

<sup>22</sup> Notice also that there is no evidence indicating at which point (West) Germanic began to develop complex intonation systems.

Given these considerations, one might not only ask to which degree systems with an accent contrast can *maintain* a rich set of intonational melodies; rather, one might also wonder whether a language with a complex intonation system and many diverse intonational melodies (such as L\*H, H\*L, L\* H\* plus boundary tones, etc.) could *acquire* a pitch-based accent contrast in the first place.<sup>23</sup> After all, following Gussenhoven, a rich set of intonational melodies should at least have severely complicated the genesis of an accent opposition. If, however, the nuclear melodies at the time of the Franconian accent genesis were indeed invariant, as under the scenario defended here, a potential ‘too many contours problem’ does not arise. Later acquisitions of new contrasts are possible, as not only suggested in this paper but also indicated by attested borrowing processes. Yet it is also unsurprising that Franconian dialects still tend to have smaller sets of intonation contours than neighboring, mutually intelligible non-accent varieties; unlike the latter, accent dialects cannot freely create new melodies or imitate pitch accents from neighboring dialects, as they also ‘have to’ encode a lexical accent contrast.

#### 4. Similarities between Franconian and Scandinavian/Slavic accent systems

The historical scenario proposed for Franconian is grounded on two processes that affected the tonal contours of the accents in different ways: (a) a retraction of pitch contours (Rule A), and (b) vertical adjustments (Rule B). In both cases, the changes led to an optimization of the relation between tone and prominence, albeit the tonal contours were reversed between the dialect areas. This section serves to demonstrate that there are diachronic processes in Scandinavian and Slavic tone accent systems that can be analyzed along the same lines.

##### 4.1. Scandinavian

In Scandinavia, historically related tone accent systems are found in Sweden, Norway, and some Danish varieties. In most dialects, the opposition is restricted to words with at least two syllables; monosyllables usually receive Accent 1 as a default. Two minimal pairs from Swedish are provided in (21); the data are taken from Gårding (1977):

- (21) a. [¹andən] ‘duck-the’ [²andən] ‘spirit-the’  
 b. [¹taŋkən] ‘tank-the’ [²taŋkən] ‘thought-the’

While in Swedish and Norwegian, the primary correlate of the opposition between Accent 1 and Accent 2 is usually regarded to be based on differences in pitch, most Danish varieties show glottalization (*stød*) in a group of words that largely correlates with Accent 1 in Sweden and Norway historically (see Ejskjær, 2005 for a typology). Here, I will focus only on development of the tone accents and disregard the development of the *stød* (see e.g. Gussenhoven, 2004; Riad, 2000; Ringgaard, 1960 for proposals that regard the *stød* as a later development out of the tone accents, and Liberman, 1982 for an account that assumes that tone accents developed out of the *stød*). The view defended in this paper is most easily compatible with the assumption that the *stød* is a later development.

There has been extensive research on the synchronic typology of the Scandinavian tone accents; the broadest empirical study so far is the lifework of Meyer (1937, 1954), who executed a large number of phonetic studies, foremost in Swedish dialects. Meyer systematically documented the areal distribution of the accent opposition and showed that – similarly to the situation in Franconian – modern dialects display substantial differences in the realization of the accents.

One major difference concerns the realization of Accent 2, which has either one or two peaks across dialects.<sup>24</sup> There is an ongoing discussion on which of both realizations reflects the older stage of the opposition: in several papers, Riad (e.g. 1996, 2000, 2003, 2006, 2009) has defended the view that two-peaked systems are the original contours, and that other dialect groups are essentially the result of a diachronic leftward shift of pitch (for a concise summary of Riad’s account, see Kingston, 2011). The opposite position is taken in Bye (2004, 2007, 2011): arguing against Riad’s analysis, Bye develops a scenario where one-peaked systems are regarded as older; essentially, peak delay and the later introduction of an initial high tone on Accent 2 in non-conservative dialects led to the most prominent differences among modern dialect groups. Another proposal, which so far has been largely ignored in the debate, comes from Meyer (1937:231–240): based on his data from Central Swedish dialects (also referred to as *Svea intonation*), Meyer suggests a

<sup>23</sup> I refer to pitch as the primary audio correlate of the opposition but certainly do not mean to imply that the contrast is based on the presence of lexical tones, rather than on e.g. metrical differences (the latter is argued for in Köhnlein, 2011; see also footnote 6).

<sup>24</sup> While this difference can be regarded as the predominant pattern in the variation, notice that there are also several dialects where the first low target in Accent 1 is preceded by a fall towards this low tone, yielding two-peaked Accent 1 realizations. Depending on the respective dialects, this high target can occur before or in the accent syllable (e.g. Bruce and Gårding, 1978; Kristoffersen, 2007; Segerup, 2004). Such falls presumably enhance the presence of the low tone (see also the discussion of *dipping* in Section 3.4).



Map 2. Five Central Swedish tone accent dialects; accent contours taken from Meyer (1954).

diachronic pitch retraction for more central dialects, whereas more South Eastern dialects such as Stockholm are claimed to have undergone vertical adaptations of the pitch contours. While Meyer's scenario is not very elaborate, especially in comparison to e.g. Riad's and Bye's comprehensive accounts, it is still interesting for our purposes: as shall be demonstrated below, it shows striking similarities to the proposed developments in Franconian. As Meyer's considerations include both one-peaked as well as two-peaked realizations, they are perfectly suited for discussing the arguably most relevant distinctions in the Scandinavian tone accent area. Note that in general, Meyer's data are widely acknowledged for their reliability and have frequently been used for the creation of accent typologies (next to Riad's and Bye's papers, see e.g. Bruce and Gårding, 1978; Engstrand and Nyström, 2002; Gårding, 1977; Öhman, 1967; Perridon, 2006, among many others). Map 2 shows disyllabic contours from five quite evenly distributed dialects in Central Sweden, taken from the overview in Meyer (1954): from North to South, these are Orsa (M33; number 33 in the overview in Meyer, 1954), Rättvik (M28), Säter (M18), Uppsala (M11), and Stockholm (M4). In all cases, the first syllable is the stressed accent syllable in focus position. In 'two-peaked' varieties (e.g. Stockholm), the high tone of Accent 1 and the second high tone of Accent 2 disappear outside of focus, which is why it is generally regarded as a focal high tone (cf. Bruce, 1977).

Meyer assumes that Uppsala represents an old stage of the contrast – he refers to the dialect as a “core variety”<sup>25</sup> (Meyer, 1937:232); interestingly, the Uppsala contours are strikingly similar to those of Rule 0 (Hasselt), which I have argued to be the oldest common system in Franconian dialects (see Section 3); in both Hasselt and Uppsala, Accent 1 is realized with an early rise and a post-nuclear fall, and Accent 2 with a slight fall towards a late low target, followed by a rise and a late fall. The contours differ only in the height of the initial target: in Uppsala, the first low target is realized phonetically higher than the second one for both accents. In Hasselt, the two low targets have approximately the same pitch height; I attribute the relatively higher first low tones in Uppsala to the tendency to raise L before H (also see Section 3.3).

To identify developmental similarities between Franconian and Scandinavian, first consider the dialects to the north of Uppsala, situated in the Dalarna region. As can be observed, the pitch contours are realized further and further to the left while the contrast between the two accents is maintained; this has first been described in Meyer (1937:237–239), and is reflected in a variety of contours from other dialects Meyer investigated. As the data indicate, the strongest leftward shift can be observed in the Orsa contours, where Accent 1 is realized with a falling rather than a rising-falling tone, and the peak of Accent 2 has been retracted far into the accent syllable. As indicated above, this gradient retraction is an important cornerstone in Riad's diachronic accent typology.

It is evident that this retraction scenario is virtually identical to the proposed development from Rule 0 to Rule A declaratives, argued for in Section 3.3. The reason that Scandinavian tone accent systems did not systematically split declaratives and interrogatives indicates that these accent systems applied TPO across the board,

<sup>25</sup> Translation: Köhnlein. Original text: “Kernmundart”.

and not in a pragmatically conditioned way, as found in Franconian. Based on a re-evaluation of Meyer's curves, Engstrand and Nyström (2002) find that the shift is implemented more systematically in Accent 2 than in Accent 1; while these differences largely concern fine-grained details in the realization, it corroborates my hypothesis that late rises in nuclear syllables are the most marked contours; in Section 3.2, I assigned them DOM 2 while Accent 1 realizations with early rises in the syllable were considered as DOM 1. This suggests that in Franconian as well as in Scandinavian, the stronger pressure to change the tonal melodies may have come from the more marked accent class, Class 2 and Accent 2, respectively.

Let us now compare the Uppsala and the Stockholm dialect. The characterizing difference between the two dialects is the heights of the respective peaks in Accent 2: in Uppsala, the first peak is only slight and can be regarded as a purely phonetic enhancement of the low tone (dipping; see also Section 3.4); the dialect could be referred to as 'marginally two-peaked'. In the development towards the Stockholm system, the pitch height at the beginning of the Accent 2 syllables was raised further and eventually reinterpreted as a high tone; the introduction of H reduced the markedness of the Accent 2 contour, which previously had a phonological H only in the post-tonic syllable. This development can be compared to the decisive step towards the tonal reversal in Franconian Rule B, a synchronically unattested stage that I named Rule B\*. As argued in Section 3.4, the crucial step in the development from Rule B\* to Rule B was the elimination of the second peak in Class 2, which was attributed to the widely reported effect of (total) downstep, the subsequent lowering of pitch peaks throughout a phrase. The Swedish facts seem to display evidence in favor of the proposed scenario: when we compare the Accent 2 realizations in Uppsala and Stockholm, we find a reversal in the height of the pitch peaks; while in Uppsala, the second pitch peak is clearly higher than the first one, the opposite is true for Stockholm, where all five realizations in Meyer (1937, 1954) show a relatively higher first peak. This suggests that raising the initial Accent 2 peak increases the likelihood that the second one will lower; this 'trade off' in peak height has first been suggested by Meyer (1937:233). That the Stockholm contours arose from dipping finds further support in the fact that non-initial Accent 1 syllables are usually preceded by a fall towards the low tone (see Gussenhoven, 2004 for a concise overview).

When we compare the Accent 1 contours in Uppsala and Stockholm, it becomes apparent that Accent 1 changed less strongly than in Franconian Rule B, where the initial pitch was raised from a low rise to a high level tone. The reason for this may be the originally higher pitch of the first low target in the Uppsala system, where the syllable-initial Accent 1 rise was already realized as a mid rather than a low rise. Therefore, the contour may be regarded as less marked than the original low rise in Franconian, at least from a phonetic perspective, and the pressure to raise pitch syllable-initially was less strong.<sup>26</sup>

Thus, while a Rule B\* system with a two-peaked realization of Class 2 has not been attested (so far) in Franconian, comparable dialects exist in Scandinavian where they even became the most widespread variety in Swedish and Norwegian. Since, as argued in Section 3.4, HLH is a marked tonal contour, this may be somewhat unexpected from a cross-linguistic perspective: yet while, naturally, marked structures do not necessarily have to be abandoned in any given language, a possible external explanation for the commonness of this contour in Scandinavian may be found in the social prestige of the respective dialect groups: while Franconian Rule B is situated in the rather non-prestigious Westerwald area, Stockholm has been an influential trading town since the late Middle Ages, which will have made it easier for a marked accent system to spread and survive.

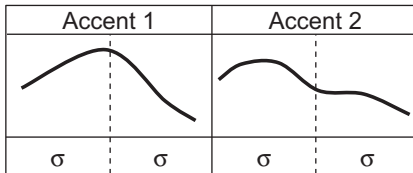
Given the high prestige and the widespreadness of the system, the likelihood for a total downstep of the second peak and the emergence of Rule-B like dialects with a tonal reversal – i.e. a one-peaked system with the high peak of Accent 2 realized earlier than that of Accent 1 – is of course substantially lowered. If at all, one might expect such systems to arise in isolated varieties. Interestingly, dialects of two isolated systems, Estonian Swedish and Finland Swedish, in fact seem to show these tendencies: for Swedish varieties spoken in Estonia, Meyer (1954) provides contours of the Nuckö dialect (M62) that are reminiscent of the Rule B reversal. As shown in (22), the high peak of Accent 2 is realized earlier in the accent syllable than the Accent 1 peak. Yet while Accent 1 falls straight, Accent 2 falls to mid first and only later to low; I interpret the mid pitch in the middle of the Accent 2 contour as a relic of the second high target in two-peaked dialects. While this peak is substantially reduced, so that it is not visible as a high tonal target anymore, it still smoothens the fall. This could be the last stage preceding a total downstep, which would ultimately erase all reflexes of the second target, and thus complete the reversal. The synchronic status of the opposition in Estonian, however, is not entirely clear: while

<sup>26</sup> Note also that for the Stockholm dialect, it has been shown that the position of the peak for Accent 1 is particularly context-dependent; it sometimes occurs late in the stressed syllable, and more often in the post-stressed syllable (Bruce, 1977, 1987; Gussenhoven, 2004; Gussenhoven and Bruce, 1999). This variability is already visible in Meyer's five curves for Stockholm: M4, which I chose as an example, can be regarded as an average realization – I am not aware whether Uppsala displays similar variation. In general, the variability of the pitch targets for high trailing tones under Accent 1 in Scandinavian indicates that the DOM of rising contours may be influenced in a stronger way by the starting point of the rise (early vs. late) rather than by the peak height that is reached in the accent syllable.



Haugen (1976) has claimed that there is no accent contrast in Estonian Swedish, Lagman (1979) argues that a difference exists.

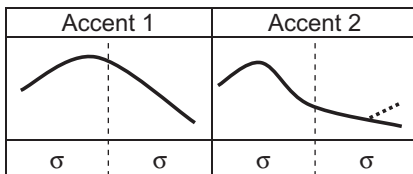
(22) Accent realizations in Estonian Swedish (Nuckö); data from Meyer (1954, M62)



Comparable data have been reported for the Finland Swedish dialect of Närpes. While the opposition is often regarded to be neutralized in most dialects of Finland Swedish (yet see Gårding, 1977:32–33 for a concise overview of counter-examples in the literature, particularly concerning West Nyland), a phonetic study by Svärd (2001) suggests that in Närpes, “the tonal pattern in words, which receive acute accent [Accent 1; Köhnlein] in Standard Swedish differ from that in words which receive grave accent [Accent 2; Köhnlein] in a systematic way” (Svärd, 2001:160). Crucially, this difference is substantial: Svärd (2001:163) notes that it “seems that the accent realizations only have one peak, with the grave peak occurring earlier in the word than the acute peak. This pattern sharply deviates from other Swedish dialects with a one-peaked grave accent.”

She also observes that sometimes, Accent 2 items are realized with a slight second peak, indicated with a dotted line in the idealized contours in (23). This suggests that these contours derive from two-peaked systems, as also pointed out by Svärd, who argues that “over time the second rise in grave accent in focal position has been lost” (Svärd, 2001:163). Thus, what Svärd suggests is a process similar to the one proposed for the change from Rule B\* to Rule B in Franconian, resulting in a reversal of the tonal alignment between one-peaked Scandinavian systems (as e.g. Orsa, similar to Rule A) and the Närpes dialect (similar to Rule B).

(23) Accent realizations in Finland Swedish (Närpes); data from Svärd (2001)



The Estonian and Finnish data thus support the proposed mechanisms leading to the reversal in Franconian. It should be noted, though, that the systems largely but not fully resemble Rule B, as relicts of the two-peaked realizations of Accent 2 can still be found in both varieties (mid pitch in Estonian Swedish, optional second peak in Närpes Swedish). Furthermore, in both cases, additional studies seem to be necessary to confirm the patterns: Svärd regards her results as preliminary and states that the opposition may be perceptually lost, and Meyer’s contours for Nuckö were published posthumously in 1954 – no comments of the author regarding the contours are available.<sup>27</sup>

To sum up, it has been shown that it is possible to derive the basic tone accent opposition in Franconian and Scandinavian dialects from similar predecessors that had rising-falling intonation from the nuclear syllable onwards. In later stages, similar adaptations of the tonal contours have occurred, which in both Franconian and Scandinavian can be divided into leftward shifts and vertical adjustments. The missing stage in Franconian, Rule B\*, is attested in many Scandinavian dialects. As mentioned above, the most striking difference between both areas is the magnitude of application: in Franconian, the changes affected declarative contours only while in Scandinavian, TPO occurred independent of the pragmatic environment – at least under the widely held view that the declarative and interrogative contours in Scandinavian tone accent systems are largely invariant, at least from a phonological perspective (see e.g. Bruce, 1977, 2005; Gårding, 1975; Kristoffersen, 2000). In (24), I provide an overview of the tonal developments in the two languages (the proposed original systems are grey-shaded):

<sup>27</sup> An anonymous reviewer raises the question as to whether it is likely that these varieties would give up their focal tone in Accent 2 (recall that the second peak of two-peaked Accent 2 is realized only under focus). It seems to me that in cases where the initial high pitch becomes ‘prominent enough’ to be reinterpreted as a high tone, it can certainly take over the function to signal focus, and the ‘old’ focal tone can be subject to reduction/deletion. After all, as typological evidence suggests, a generally falling nuclear pitch accent (e.g. H\*L) can be regarded as a default way to signal prominence (see Section 3.2).



(24) Comparison between the tonal developments in Franconian and Scandinavian discussed in this paper

Franconian dialects	Contours Franconian		Contours Scandinavian		Scandinavian dialects
	Class 1	Class 2	Accent 1	Accent 2	
Rule A (Cologne) <i>Leftward shift</i>					Orsa <i>Leftward shift</i>
Rule 0 (Hasselt) <i>Original stage</i>					Uppsala <i>Original stage</i>
Rule B* (unattested) <i>Initial pitch raising</i>					Stockholm <i>Initial pitch raising</i>
Rule B (Arzbach) <i>Final pitch lowering</i>					Nuckö, Närpes <i>Final pitch lowering</i>

As leftward shifts play a central role in the scenario defended here for Scandinavian, it is largely in line with Riad's proposal of the Scandinavian accent genesis and its spreading. Yet there is a noticeable difference between the two approaches; while the account defended here regards dialects of the Uppsala type as an old common stage (in the spirit of Meyer), Riad's oldest stage is Stockholm – in other words, Riad argues for 'fully' two-peaked systems as being original rather than 'marginally' two-peaked ones. Both mechanisms can derive the modern systems; it may be an advantage of my analysis that it makes it possible to describe historical developments in Franconian and Scandinavian tone accent systems along similar lines and puts them in the context of general principles concerning the relation between tone and prominence.

Yet proposing Uppsala to be an old stage of the contrast has some implications for the genesis of the opposition in comparison to Riad's proposal. As this much debated and complex issue is not in the focus of this paper, I will only briefly address the most important aspects of Riad's proposal and leave a more elaborate discussion of the patterns as well as a comparison to the Franconian accent genesis for future research.

What concerns the initial trigger of the genesis, I adopt the scenario put forward in d'Alquen and Brown (1992), and Riad (1998); yet also see Bye (2004, 2007) for a criticism of the approach. Essentially, these authors argue that an original sequence of a stressed syllable plus two light syllables or a sequence of two heavy syllables correlate with Accent 2, and originally monosyllabic words and words with stressed heavy syllables followed by one light syllable correlate with Accent 1. Let us now consider some of the effects of syncope and clash resolution, which Riad (1998:69) identifies as a trigger of the original contrast:

(25) Basics of the Scandinavian tone accent genesis, according to Riad (1998)

Stage 1		Stage 2		Stage 3
doomijan H H	Syncope	døø.man H H	Clash resolution	<sup>2</sup> døø.ma H H
wurdoo H H	Clash resolution	wordu H	Syncope	<sup>1</sup> ord H
gastiz H	Syncope	gæstr H	Epenthesis	<sup>1</sup> gæster H

All items shown in (25) have initial main stress. Following Riad, \**doomijan* had a secondary stress on the third syllable (stage 1). This was marked with an additional high tone, next to the H on the main-stressed initial syllable; these two high tones were separated by a low tone. The resulting HLH melody was retained after a syncope-induced stress clash was resolved by making the second syllable light (stage 2 to 3); this resulted in a two-peaked Accent 2. \**wurdoo*, which had an original secondary stress on the heavy second syllable, resolved the stress clash at an earlier stage; thus, it did not have a secondary stress in stage 2 (*wordu*; the second syllable was light). \**gastiz*, then, did not have a secondary stress to begin with, and due to the lack of a second H, both *ord* and *gæster* received Accent 1 at stage 3 (which corresponds to the realizations in Old Swedish).

Under my assumption that Stockholm is an innovation (re-interpretation of high syllable-initial pitch as a high tone), this proposal has to be slightly adapted. Consider the following scenario: the original Early/Late PN intonation was

rising-falling for both accents, as in the present day Uppsala system. As Pre-Accent 2 was followed by a heavy, bimoraic syllable in Late PN, there was more phonetic space to realize that tonal melody than in forms like \**wordu* or \**gæstr*. This is shown in (25, left side). During the shortening process from \**døø.man* to *døø.ma*, the contrast was re-interpreted as a prosodic opposition. It is to be expected that during this process, the second syllable of *døø.ma(n)* was sometimes realized with or without the final [n]: in cases of deletion, speakers may still have pronounced the contour as if the [n] was still present, thus with a later pitch peak than in corresponding words with light second syllables.<sup>28</sup>

This led a new generation to interpret the contrast as a pitch-based opposition, and the contrast was re-interpreted as one between an early aligned versus a late aligned low tone in the focus syllable (25, right side), similar to present day Uppsala.<sup>29</sup> Epenthesis in some consonant clusters, as in the change from *gæstr* to *gæster*, post-dated the genesis of the melodic contrast, and furthermore did not create new heavy syllables.<sup>30</sup>

(26) Scandinavian tone accent genesis, adapted proposal

Before genesis (stage 2)				After genesis (stage 3)			
dø	ø	ma	n	<sup>2</sup> dø	ø	ma	n
wo	r	du		<sup>1</sup> o	rd	u	
gæ	s	tr		<sup>1</sup> gæ	s	t(e)r	
μ	μ	μ	μ	μ	μ	μ	μ
σ		σ		σ		σ	

#### 4.2. Serbo-Croatian

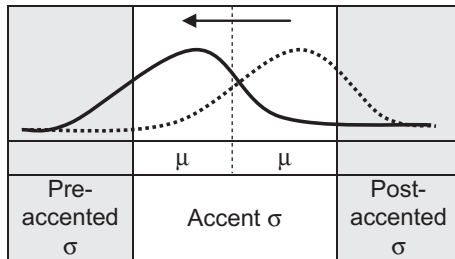
I would like to end this section by pointing out three more cases of TPO-induced adaptations of tonal contours from Serbo-Croatian: Čakavian, Neo-Štokavian, and Old-Štokavian dialects have undergone adjustments of originally rising pitch contours that are similar to the developments of Class 1 in Franconian Rule A and Rule B, respectively. Old-Štokavian dialects underwent a diachronic leftward shift of Late Common Slavic rising pitch contours, which eventually led to falling contours instead of rising ones. Bethin (1998:165) refers to the process as a “retraction of the ictus on the moraic level”; it is visualized in (27):

<sup>28</sup> The mechanism applies in similar ways to shortened originally long post-tonic vowels, as in \**satidee* > \**satee* > <sup>2</sup>*satte* (see Riad, 1998:69).

<sup>29</sup> A somewhat related case may be found in the emergence of an accent contrast in Scottish Gaelic (Bosch and de Jong, 1997; Ladefoged et al., 1998): some originally disyllabic words lost intervocalic consonants and are now segmentally indistinguishable from originally monosyllabic words; yet they are still pronounced with the pitch contours of disyllabic words, leading to a contrast between an early rise in original monosyllables versus a late rise in original disyllables. A similar pitch opposition arises from a difference between originally monosyllabic words with epenthetic vowels (early rise) versus such with only underlying vowels, which show a late rise (see losad, 2012 for a metrical analysis of this accent opposition).

<sup>30</sup> Note that in many modern East Norwegian dialects, the high peaks in disyllabic Accent 1 words occur later than in most Swedish dialects (see e.g. Kristoffersen, 1990, 2000, 2006a,b); similar patterns can be found in Swedish Göta dialects. Riad (2003:106–115) argues on the basis of the tonal melodies in compounds that these late aligned high tones can be attributed to a different phonological status of the high prominence tone: whereas in systems like Stockholm, the high tone closely follows the main accented syllable, it is located at the right edge of compounds in late aligned dialects; Kristoffersen (2000:278–282) analyses such late high tones in Norwegian dialects as focal boundary tones, rather than ‘standard’ focal tones. Riad regards this as a later development out of systems of the Stockholm type; alternatively, this difference could also reflect an original difference between the dialect groups concerning the alignment of the high focal tone that was retained.

## (27) Pitch retraction in Old-Štokavian dialects

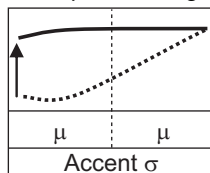


As can be observed, this change from a rising to a falling contour is virtually identical to the development of Class 1 in Rule A dialects: in both systems, it led to a prosodic optimization of the pitch contours, from a rise with a high target in the accent syllable to a fall. Along these lines, Langston (2011:271) argues that the “change of the rising accent to falling [. . .] in many central South Slavic dialects [. . .] can be understood as the elimination of a more marked tonal contour.” The optimizing character of the shift is demonstrated by the behavior of originally falling contours: these remained unchanged, which led to a neutralization of the contrast between rising and falling accents. From the perspective of TPO, this is not too surprising, as falling contours are unmarked already. Thus, in the case at hand, possible language-internal forces to preserve accent contrasts, as active in Franconian and Scandinavian, were overruled by TPO.<sup>31</sup>

In Čakavian, the rising accents of Late Common Slavic did not change to falling ones, and the original contrast between rising and falling accents is still maintained; yet a detailed phonetic study by Langston (2006:25–70) demonstrates that the phonetic realization of the contours differs from several other varieties that retained the opposition: instead of a rising contour, the ‘rising’ accents display a high level pitch, which is shown in (28). As pointed out to me by an anonymous reviewer, similar cases of initial pitch raising in accent syllables with originally rising pitch have been reported for Neo-Štokavian: as argued in Lehiste and Ivić (1986), dialects located in the North-East of the area are characterized by high level pitch in originally rising accent syllables; speakers from the South West, on the other hand, show true rising contours.<sup>32</sup> As these authors note, a similar observation has been made as early as Masing (1876), who studied the realization of the accents with a Serbian and a Croatian informant. Based on his auditory judgments, which Lehiste and Ivić regard as remarkably accurate (Lehiste and Ivić, 1986:175), Masing argues that the Croatian speaker produced true rises but his Serbian informant realized the ‘rising’ accent with high level pitch; see (28) for the corresponding pitch contours.

Once more, we can regard the changes in Čakavian and Neo-Štokavian as processes triggered by TPO: a tonal melody L\*H was changed to a high plateau (H\*), similar to the development towards Class 1 in Rule B, where pitch was raised at the beginning of the accent syllable. Again, falling accents remained unchanged – they were already ‘optimal’ from a prosodic perspective.

## (28) Initial pitch raising in Čakavian and some Neo-Štokavian dialects



Notably, in the Serbo-Croatian cases, the evidence in favor of leftward shifts and initial pitch raising is unambiguous, at least in a way that there is consensus in the literature that both the fall in Old-Štokavian as well as the high level pitch in

<sup>31</sup> There have been a number of processes in the history of Slavic where the peaks of falling accents were retracted to preceding syllables, yielding new rising accents, counter to TPO. However, these processes usually interact with segmental properties, i.e., the retraction occurred from segmentally weak syllables (see also Section 3.3).

<sup>32</sup> In Neo-Štokavian, stress was retracted from non-initial high-toned syllables to preceding low-toned ones, without affecting the tonal melody (at least in dialects that still show ‘true’ rises for rising accents). This change contradicts the universal tendency to mark stress with H rather than L. The cause of this process is still somewhat obscure: several explanations have been put forward in the literature; yet at least from the viewpoint expressed in Lehiste (2004:111), none of them is convincing. Some scholars have discussed a possible causal relation between this development and the Old-Štokavian retraction discussed in this section; as, however, the data indicate that the Old-Štokavian retraction could only be the cause of the Neo-Štokavian retraction rather than a consequence of it, this is not of direct relevance for the processes presented here.

Čakavian and Neo-Štokavian derive from originally rising contours. Accordingly, this lends further support to the idea that the proposed historical developments in Franconian and Scandinavian constitute regular changes of tonal melodies, in line with TPO.

## 5. Conclusions

This paper provided interrelated solutions to long-standing empirical problems of Germanic accentology, related them to tonal developments in the history of the Slavic languages, and identified two connected mechanisms of tonal change. The point of origin for my proposal was to provide an explanation for the ‘Rule Reversal’ in the Franconian tone accent area: based on newly gathered data (Köhnlein, 2011), it was argued that the semi-reversal between Rule A and Rule B (reversal in declaration, non-reversal in interrogation) can be understood as independent developments out of a common predecessor, whose synchronic reflexes are still present in West Limburgian dialects (Rule 0). The driving force for the changes was identified as *tone-prominence optimization* (TPO), enforcing a change from a marked rising declarative intonation to a falling or high level one in the nuclear syllable. The reversed declaration melodies are the result of different adaptation strategies in the two dialect groups: whereas Rule A shifted the sentence intonation leftward, Rule B underwent vertical adjustments of the intonational melodies. The interrogative intonation, however, remained unchanged, which explains the cross-dialectal similarity in modern dialect areas showing diverse contours in declarative contexts.

With respect to Franconian, this proposal not only accounts for the reversed declarative contours of Rule A and Rule B as well as for the similarity of the interrogative melodies in modern dialect areas, it also discusses the contours in phrase-medial as well as in phrase-final positions. What concerns the broader relevance of the analysis, it was shown that both proposed mechanisms for TPO can be applied to other accent languages. Next to evidence from Čakavian and Old-Štokavian dialects of Serbo-Croatian, the development towards modern Scandinavian tone accent dialects shows the most striking parallels to Franconian: building on proposals by Meyer (1937) and Riad (e.g. 1998, 2000, 2003), I demonstrated on the basis of (South) Eastern and Central Swedish dialects that the mechanisms proposed for Franconian can successfully model the evolution of one-peaked vs. two-peaked accent systems. From a general perspective of language change, my proposal provides tools for the diachronic analysis of diverse intonation patterns in related dialects, especially concerning tonal developments in languages that can be traced back to an improvement of the relation between (intonational) tone and general prominence.

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