

Tone in Germanic: Comparing Limburgian with Swedish

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1. Introduction

There can be few other researchers who have more emphatically insisted that the study of lexical tone should take place in the context of intonation than Professor Zongji Wu. Under variation in intonation, the underlying tones of Standard Chinese ‘form a large number of surface forms, and the resulting tonal contours are quite different from their underlying forms’ (Wu 2000). In the case of the dialects spoken in the extreme south-eastern corner of the Netherlands, roughly the southern half of the Dutch province of Limburg, and the extreme north-eastern corner of Belgium, roughly the Belgian province of Limburg, the interaction between tone and intonation makes it almost impossible to study either aspect of the phonology in isolation. The reason is that, in many cases, choosing a different intonation for a sentence will change its contour as much as will the choice of a word with a different lexical tone. This can be illustrated on the basis of the contours for two monosyllabic words from the dialect of Roermond spoken in isolation. One tone, known as Accent I, is a fall when spoken with declarative intonation, much like Standard Chinese tone 4, but it is a rise-fall, much as if Standard Chinese tone 2 and tone 4 were combined on a monosyllable, when said with question intonation. The other tone, Accent II, is a fall-rise, much as if Standard Chinese tone 4 and tone 3 were combined on a monosyllabic utterance, but it is a straight rise, much like Standard Chinese tone 2, when spoken with question intonation (see also Table 1 below).

The interaction between lexical tone and intonation in Limburgian Dutch dialects is therefore different from that in Standard Chinese, where the variation between different

intonations ‘causes changes of registers rather than those of contours’ (Wu 2000): contour shape is as likely to be affected by a change in lexical tone as by a change in register. I feel honoured for being given this opportunity to provide some information on the tonal structures of these dialects in a volume dedicated to someone whose scientific message is so eminently relevant to them. Limburgian Dutch dialects as well as the contiguous German tonal dialects in the region coinciding with the former *Rheinprovinz* may collectively be referred to as Central Franconian (cf. Newton 1989). Understandably, because of their large typological distance, a comparison of Limburgian Dutch with Chinese is less fruitful than one with Swedish, which like Dutch belongs to the Germanic branch of Indo-European. The Scandinavian (Norwegian and Swedish) and Central Franconian dialect areas represent the only two varieties of Germanic with lexical tone; their nearest boundaries are some 800 km apart and their tones almost certainly have different origins. However, because of the relative similarity of their overall prosodic structure, a comparison will be useful, also because the Swedish system is so well known, thanks to the work of Eva Gårding (1977) and Gösta Bruce (Gårding 1977, Bruce 1977). Like Swedish, the Limburgian dialects have a binary tone contrast on the stressed syllable of the word. I will base this contribution on the comments on Bruce (2003), earlier published as Gussenhoven (2003).

2. Typology

Even though the geographical area of the tonal dialects in the Netherlands and Belgium is small, there is considerable variation, not just in the tonal phonology, but in the phonology in general. Towns that are a 20-minute car drive apart may reveal quite

substantial differences. Moreover, it is still possible to experience the excitement of uncovering the tonal grammar of dialects whose prosodic systems are virtually undescribed. Taking their cue from Bruce (1977), the binary tone opposition was recently studied, in varying degrees of depth, as a function of the variables in (1) in a number of dialects, among others by Gussenhoven & van der Vliet (1999), the dialect of Venlo, Gussenhoven (2000), who studies the dialects of Venlo and Roermond, both of them spoken in the Netherlands, and Heijmans (1999), who studied the dialect of Tongeren in Belgium.

- (1) a. Final syllable vs non-final syllable in the Intonational Phrase
- b. Focused word vs non-focused word
- d. Discoursal meaning: Statement vs. Question vs. Continuation

2.1 Prominence scale

Bruce offers a scale of prosodic prominence for Swedish syllables, which I reproduce as in (2). At the lowest level, there is a distinction between *stressed* (x) and *unstressed* (.) syllables. A stressed syllable begins a foot, and is *accented* or *unaccented*, where ‘accented’ means that the syllable carries lexical tone. The second constituent of a noun compound, like *-djur* in *lamadjur*, is unaccented in this sense. The rightmost accented syllable in the focus constituent, here *djur*, receives the intonational *focus* marking tone, also called a *pitch accent*. The assumption is that (2) has broad focus, and could thus be an answer to ‘What do you see in this picture?’

(2) Prominence hierarchy:	Focus-marked				x
	Word accented	x		x	x
	Foot	x .	x .	x .	x
					Lamadjur och lama djur
					‘Lamas and paralysed animals’

This prominence hierarchy transfers directly to Limburgian, but the conditions in which these syllable types occur differ, and also vary among the dialects. In particular, stressed unaccented syllables, i.e. stressed syllables without lexical tone, occur as word-internal secondary stresses, like the final syllable of Venlo *'hospitaal* /'hɔspita:l/ 'hospital', or primary stresses in positions where the word tone contrast is impossible. While in Swedish this happens in the case of stressed syllables of function words (e.g. *'inte* 'not') and - as said - in the second constituent of a compound, in many Limburgian dialects, the contexts in (3) frequently exclude the lexical tone contrast.

- (3) a. No tone contrast on syllables that have only one sonorant mora (all three dialects);
 b. No tone contrast on IP-internal syllables without intonational pitch accent
 (Venlo, Roermond)

Due to (3a), there may be intonationally focused syllables which nevertheless cannot be assigned to Accent I or Accent II, whose contrast depends on the presence of a second sonorant mora. For instance, the stressed syllables of Roermond words like *kat*, *bes*, *komme* [kɑt, bɛs, 'kɔ.mə] 'cat', 'berry', 'come', therefore, have neither Accent I nor

Accent II. Its phonetics is more similar to that of Accent I than Accent II. Due to (3b), Roermond and Venlo fail to show a difference between Accent I and Accent II postfocally, unless the contrast is in the final syllable of the IP. Compare the lack of word accent on the words *lange* and *nonne* in Roermond (4a) with the presence of the word accents on *långa* and *nunnor* in Swedish (4b), on which Accent II can easily be perceived. The Tongeren dialect agrees with Swedish, however.

- (4) a. Veer beLONE de lange nonne
 ‘We will reward the tall nuns’
 b. Man vill LÄMNA nåra långa nunnor
 ‘They will leave some tall nuns’

A difference which is not captured by the example structure in (2) concerns final syllables in the Intonational Phrase (IP). In Swedish, no contrast is possible on such syllables, because Swedish Accent II requires minimally one unstressed syllable to follow in the word. By contrast, in the Limburgian dialects, there frequently are monosyllabic minimal pairs.

2.2 Melodic factors

By melodic factors I mean the various melodic shapes that a language has to express intonational meanings, like assertion vs interrogation. Swedish essentially has one such melody at the phonological level, which will be modified phonetically depending on whether the utterance is meant as a statement or a question or an exclamation, etc. In

this respect, Swedish resembles Standard Chinese, which as observed above uses register variation to express these meanings. Many Limburgian Dutch dialects, among which the three dialects under consideration, have more than one melody. These melodies are most clearly distinguishable in final position in the IP, that is from the last focus syllable onwards. Phonologically, these contours amount to a *pitch accent* and a *boundary tone*, in the sense of Pierrehumbert (1980). The pitch accent associates with a focal word, which is capitalized in the examples, and is realized on the main stress in Limburgian dialects, while the boundary tone appears on the last syllable of the IP.

Before considering this phonological structure further, I repeat the point that the shape of the word accent and the shape of the pitch accent-cum-boundary tone are phonetically speaking a ‘package deal’, in which it is often not possible to identify the individual contributions. To illustrate this, Table I gives the shapes of pitch contours in focal non-final and final positions for the dialect of Roermond, for its two intonation contours. Clearly, we cannot straightforwardly identify the lexical and intonational parts of the contour. For instance, in statement intonation, Accent I has an earlier fall than Accent II in non-final position, but a later fall in final position. In the question intonation, Accent 1 has an earlier rise than Accent 2 in non-final position, but contrasts as a rise-fall with a rise in final position. There seems little chance of factoring out a common element from these contours for the components ‘statement’, ‘question’, ‘Accent I’ or ‘Accent II’.

[HERE TABLE I]

Help may come from the contours of *non-focal* final syllables, since here the focus marking tone must be absent. Table II shows these contrasts for statements and questions. If anything, the picture becomes more confusing, since the non-focal question contours resemble the focal statement contours for both Accent I and Accent II.

[HERE TABLE II]

Venlo turned out to have two question intonations, and neither of these look like the Roermond contours, as shown in Table III. There is also a separate contour which is typically used for non-final IP's, for which Roermond uses its question contour. Venlo and Roermond are some 25 km apart, but notice how, on final syllables, a fall-rise in Roermond signals a statement, but a question in Venlo, both for Accent II, and that a rise signals a question for Accent II in Roermond, but a question for for Accent I in Venlo.

[HERE TABLE III]

When we consider the contrasts in the final non-focal position, shown in Table IV, it appears that the only F0 difference is found in the statement contours, where Accent II ends just a little higher. For the rest, the tonal difference resolves as a *durational* difference, Accent II being longer in IP-final syllables, as indicated by the vertical dotted lines in Tables III and IV.

[HERE TABLE IV]

2.3 Phonology

The data in Tables I-IV can be understood if we assume that the lexical and intonational tone string undergoes dialect-specific adjustments, motivating a distinction between underlying and surface forms. First, let's consider the word accent contrast. Table V shows a *privative* opposition in Limburgian dialects, where Accent I words simply have no lexical tone and Accent II words have H on the second sonorant mora. (Tongeren is different again, see below). Indeed, Accent I contours resemble the intonation contours of words with one sonorant. In the analysis of Bruce (1977) of Stockholm Swedish, both Accent I and Accent II have a tonal specification.

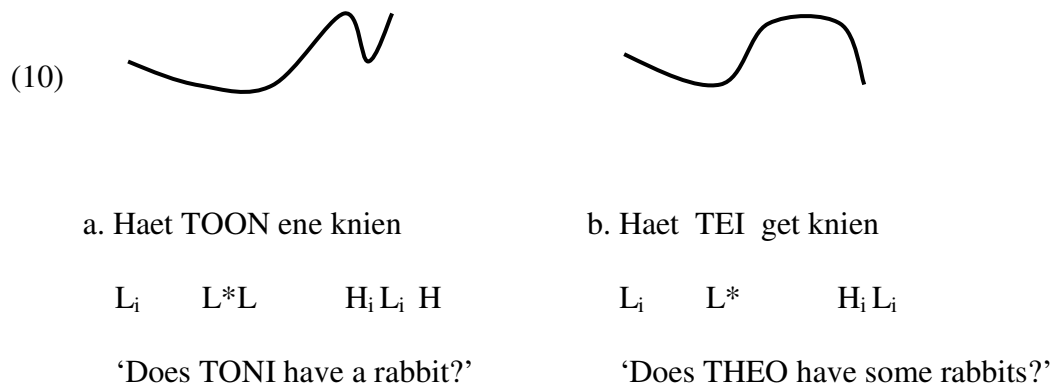
[HERE TABLE V]

The lexical tone of Accent II combines with the intonation contours in Table VI.

[HERE TABLE VI]

For Roermond, there are two such adjustments. First, any tone on the mora after the L* focal tone is L, i.e. tautosyllabic L*H becomes L*L. This can be seen in the low pitched non-final syllable in the question intonation in Table I. Second, in final position, the lexical tone is added *after* the boundary tones. The latter effect can be seen in the

dotted contours in the last column of Tables I and II. The two adjustments *both* apply in final focused syllables, where $L^* H_i L_i H$ becomes $L^* H H_i L_i$, which becomes $L^* L_i L_i H$, or equivalently $L^* L_i H$, the rise. To illustrate, in (10a), a pre-final Accent II occurs in combination with an Accent II on a final non-focal syllable. The assimilated L-tone occurs on *Toon*, and the final H-tone on *knien*. In (10b), a sentence with Accent I-words is given, which lacks the lexical tones, but is otherwise prosodically identical.



The Venlo dialect has four contours, thanks to an optional H_u -boundary tone of the utterance, which doubles each of the $H^* L_i$ and $H^* H_i$ contours. To create the identical F0 contours for Accent I and Accent II in final position (cf. Table IV), the dialect assimilates a final lexical tone to the IP-boundary tone. Only in the case of the declarative does this produce a pitch difference: $L L_i$ (Accent II) is pronounced as a level stretch or a weak rise instead of the fully low pitch of L_i (Accent I). This is illustrated in (11a), which should be compared with (11b).



a. Diene ERM zit aan diene bein

L_i H^*H L L_i

‘Your ARM is attached to your leg’

b. Dien ERM zitte aan dien bein

L_i H^* L_i

‘Your ARMS are attached to your legs’

A second adjustment in the Venlo dialect is due to the fact that the contours with H_iH_u have H^* for Accent II and L^* for Accent I and syllables with one sonorant mora. Example (12a) illustrates this adjustment, and should be compared with (12b). The early pronunciation of H_i in (12b) is due to the association of this tone to the empty second mora of *erm*, just as the early low pitch in (11b) is due to the same kind of ‘secondary association’ of L_i .

(12)



a. Zit diene ERM aan diene bein

L_i $H^* H$ $H H_i H_u$

‘Is your ARM attached to your leg?’

b. Zitte dien ERM aan dien bein

L_i L^* $H_i H_u$

‘Are you arms attached to your legs?’

3. Phonological factors

Table VII lists some structural questions we can ask, and answers these for the three Limburgian dialects and for Stockholm Swedish. The first question concerns the specification of Accent I: is it lexically toneless or not? In Limburgian dialects, it always is; in Stockholm Swedish, both word accents are specified in the analysis of

Bruce (1977). Second, in Limburgian, Accent II is L in Tongeren, H elsewhere; Swedish has bitonal pitch accents. Third, in Venlo and Roermond, there is good evidence for moraic associations within stressed syllables, unlike Tongeren, which would appear to use the stressed syllable as the TBU; here Stockholm agrees with Tongeren. Fourth, neutralization of the tone contrast in non-focal final contexts is a feature of Venlo and Roermond, but again not of Swedish and Tongeren. The fifth question concerns the number of different intonation melodies. The Limburgian dialects all have more than one of these, unlike Stockholm. An interesting variable is number six, which concerns the order in which the tones appear in the stressed syllable: Venlo, and Roermond have the focal tone before the lexical tone, Tongeren and Stockholm have the opposite order. The seventh question concerns the orthogonality of the grammar: are all contours predicted by the grammar actually attested? Here, note the absence of a ‘question intonation’ on focused final syllables with Accent I in Venlo, as evident in Table III. (Questions with this context will have the ‘surprised question’ contour.) Eighth, Venlo and Roermond have phonological adjustments so as to produce surface representations that differ from underlying representations, but Tongeren and Swedish do not. Finally, as observed in section 2.1, Swedish cannot contrast monosyllabic forms, since Accent II minimally requires a bisyllabic foot. As said, Limburgian dialects can.

Tongeren resembles Swedish the most: out of nine features, the dialects share five, and if the Swedish continuation contour is counted separately, they would also share the same number of intonation contours.

[HERE TABLE VII]

5 Conclusion

Studying the phonology and phonetics of lexical tone without taking the intonational context into account is never a good idea, but it is virtually impossible in the case of the Limburgian word accents. While the distribution of the tones over the words of the language can be studied independently of intonation, provided a native speaker is around to tell the researcher which words have Accent I and which Accent II, and segmental correlates of the two word accents can be sought out, the tonal structure requires an integrated approach. Such an approach has revealed that the Limburgian dialects have strikingly different grammars.

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Table I. Final and non-final contours for Accent I (solid line) and Accent II (dotted line) in Statement and Question intonation. Shaded portions indicate the stressed syllable.

	Non-final	Final
Statement		
Question		

Table II. Final post-focal contours for Accent I (solid contours) and Accent II (dotted contours) in the dialect of Roermond.


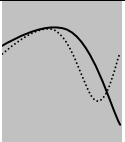
	Final
Statement	
Question	

Table III. Final and non-final Venlo contours for Accent I (solid line) and Accent II (dotted line) in Statement, Question and Surprised question. The vertical dotted line in the last column indicates a longer syllable duration for Accent II.

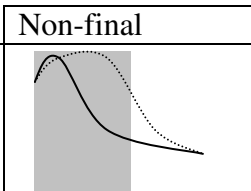
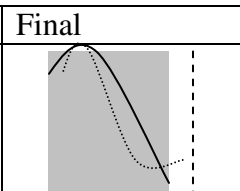
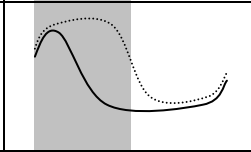
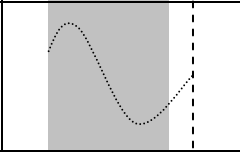
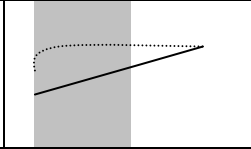
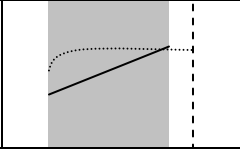
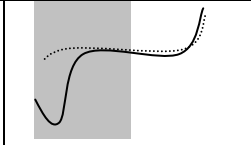
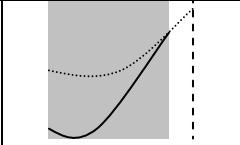
	Non-final	Final
Statement		
Question		
Continuation		
Surprised question		

Table IV. Final post-focal contours for Accent I (solid contours) and Accent II (dotted contours) in the dialect of Venlo.

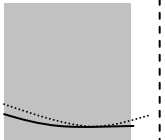
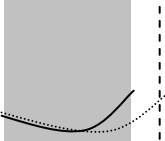
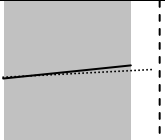
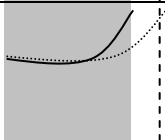
	Final
Statement	
Question	
Continuation	
Surprised question	

Table V. Lexical tone contrasts in Stockholm Swedish and Limburgian.
 After Gussenhoven & Bruce (1999).

	Accent I	Accent II
Stockholm Swedish	σ H+L	σ σ H+L
Roermond, Venlo	toneless	μ μ H

Table VI. Intonation contours of Roermond and Venlo

	Roermond	Venlo
Statement	H* L _i	H* L _i
Question	L* H _i L _i	H* L _i H _u
Continuation	-	H* H _i
Surprised question	-	H* H _i H _u

Table VII. Structural comparisons among four Dutch dialects and Stockholm Swedish

	Venlo	Roermond	Tongeren	Stockholm
1. Toneless Acc I	Yes			No
2. Lexical tone	Ø~H		Ø~L	H*+L~H+L*
3. TBU	μ		(?)	σ
4. Contrast	Neutralise outside final and focal syllables			No neutralization
5. Focus-marking contours	H* L _i H* H _i H* L _i H _u L* H _i H _u	H* L _i L* H _i L _i	L*+H L _i H* L _i	H L _i (H _i)
6. Order	Tf – T		T – Tf	T-Tf
7. Ineffability	No H* L _i H _u with Acc 1 on IP-final syllable	-	-	-
8. Phonological adjustments	H→L/ —] L _i L*→H*/(—H) _σ ... } H _i H _u	(HL) _σ →(LL) _σ H } T _i →T _i H }		None
9. Monosyllabic contrast	Yes			No