

The dialect of Maastricht

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Maastricht (*Mosae Trajectum* in Roman times) is the capital of the Dutch province of Limburg and one of the oldest cities in the Netherlands. Situated in the extreme south, close to the Belgian border, the city is fairly small, with a population of just over 120,000. Maastricht enjoys a world-wide reputation as the place where the Maastricht Treaty was signed in 1992. The dialect of Maastricht belongs to the south-eastern dialect group (Weijnen 1966: §§ 166, 173), which shares a number of properties with dialects in Belgium and Germany. A more recent classification (Belemans, Kruijsen & van Keymeulen 1998) assigns the dialect to Central Limburgian, which comprises seven subgroups in the Netherlands and Belgium, more particularly to Trichterlands. Two earlier descriptions are Houben (1905), which is historically oriented, and van Buuren (1991).

Virtually all speakers are bilingual in the sense that they are also fluent in Standard Dutch. The Maastricht dialect enjoys very high prestige in the community. It is used for a large number of functions and by speakers of all social levels (Münstermann 1992). Research has provided evidence of dialect loss, particularly among members of the youngest generation (16-20 years of age). This is especially noticeable in the verbal morphology (Münstermann & Hagen 1986, Münstermann 1986). Among the factors that may have contributed to dialect loss is the foundation of the University of Maastricht in 1976. The university has since attracted a large number of non-dialect speakers (including more than 10,000 students), which is likely to have increased the impact of Standard Dutch on the local dialect. To give just one example, there is a tendency among young dialect speakers to turn verbs with regular morphology into irregular verbs, when these have cognates with irregular morphology in Standard Dutch. The present description is based on the speech of one of the authors, FA, a middle-class, bilingual speaker in his mid sixties.

Consonants

	Bilabial	Labiodental	Alveolar	Dental	Post-alveolar	Palatal	Velar	Uvular	Glottal
Plosive	p b		t d		c		k g		(?)
Nasal	m		n		ɲ		ŋ		
Fricative		f v	s z		ʃ ʒ		x ɣ		h
Approximant	β					j			
Lateral Approx.			l						
Trill								r	

As in other varieties of Dutch, obstruents contrast for voice in the onset, but not in the coda, where they are voiced when immediately occurring before /b,d/, as in /βazbak/ 'washbasin', /ɔbdraχ/ 'dedication', but voiceless elsewhere. /p,t,k/ are voiceless unaspirated, /b,d,g/ are fully voiced. /g/ only occurs word-internally, although loans with initial /g/ do occur. Non-phonemic [ʔ] separates syllable-final [ə] from following vowels; other hiatus positions are solved by glide-insertion (see below).

p	pæn	'pen'	t	tak	'branch'	k	kat	'cat'
b	blinə	'shutters'	d	deks	'often'	g	'zɛgə	'say'
			c	'bɔcəkəR	'rascal'	(ʔ	ʔəʔæRəf	'inherited')
m	mins	'human being'	n	næk	'neck'	ŋ	'kø:nɪŋ	'king'
			ɲ	'kɔɲak	'brandy'			
f	fits	'bicycle'	s	'sukəR	'sugar'	x	'laxə	'laugh'
			ʃ	ʃat	'darling'	fi	fiart	'heart'
			ʒ	ʒyβə'le:R	'jeweller'			
v	vœ:l	'much'	z	zi	'sea'	ʏ	ʏɑβ	'quick'
			l	lɔx	'air'	R	Rɔ:m	'frame'
β	'βɛlə	'want (v)'	j	jœ:x	'youth'			

/c,ʃ,ʒ,ɲ/ are pre-palatal, articulated with the blade of the tongue against the post-alveolar place of articulation, the tip being held down. As is the case in the standard language, /c/ may be interpreted as /tj/, since the sequence /t/-/j/ occurring across morpheme boundaries will be /c/, just as /n/-/j/ and /s/-/j/ will be /ɲ/ and /ʃ/, respectively. Analogously, /ʒ/ would be /zj/ in this analysis, even though /ʒ/ is always morpheme-internal.

Of the voiced fricatives, /ʏ/, and to a lesser extent /v/, may be partially devoiced word-initially, without merging with the voiceless /x,f/, however. The occurrence of /x/ in word-initial position is limited to loans.

The approximant /β/ has weak lip rounding in coda position, but has spread lips in the onset. /R/ is a (pre-)uvular trill with a fricative component, the latter element being particularly prominent in the coda, where the consonant is partially devoiced.

Initial CCC-clusters are confined to /spl, spr, str/, as in /splɪt/ 'split-3SG', etc. CC-clusters consist of :

- a. plosive+/l,ɾ,j,β/, as in /plɔ:ʏə/ 'tease', /drei/ 'three', /tβi/ 'two', /pje:/ 'pedestal', etc., with gaps for /*pβ, *bβ, *tɪ, *dɪ, *tj, *kj/;
- b. /f,v,s,ʏ/+/l,ɾ/, as in /flup/ 'fear', /vrɔ:χ/ 'question', /slym/ 'clever', /ʏlat/ 'smooth', etc., with a gap for /*sR/;
- c. /ʃ/+/R/, as in /ʃrup/ 'syrup';
- d. /s/+/m,n/, as in /smik/ 'whip', /snəkə/ 'yearn';
- e. /s/+/p,t/, as in /spø:lə/ 'rinse', /stœk/ 'part';

- f. /s,z/ + /β/, as in /sβa:re:/ 'evening reception', /zβu:R/ 'heavy';
 g. /kn/, as in /kno:γə/ 'gnaw'.

Maastricht is a relic area for /s/+/p,t,m,n,l/ clusters, which in the surrounding area have been replaced with /ʃ/+C, joining /ʃR/. However, /ʃ/ in such clusters has made inroads into the dialect, and variably occurs in e.g. /ʃlou, slou/ 'clever', /ʃtym, stym/ 'voice', etc. Similarly, /zβ/ varies with /ʒβ/ in e.g. /zβæns/ 'beating'. The post-alveolar pronunciations have been characterised as 'emphatic' (Tans 1938: 199) or as having 'affect' (Endepols 1955).

Final CC-clusters comprise

- a. /p,t,k/+/s/, as in /Ryps/ 'caterpillar', /bats/ 'buttock', /fiæks/ 'witch';
 b. /tʃ/, as in /lutʃ/ 'teat, dummy';
 c. /mp, nt, ŋk/, as in /bəʃe:mp/ 'embarrassed', /sænt/ 'cent', /vəR'laŋk/ 'yearn-3SG';
 d. /l,R,j,β/+/t,s/, as in /bœlt/ 'hunchback', /fiy:RS/ 'hear-2SG', /ʃriβs/ 'shout-2SG', /saɟs/ 'sauce', etc.;
 e. /l,R/+/p,f,k,x,m,n/, as in /ʃɔlk/ 'apron', /kœRF/ 'baskets', /zœRX/ 'care', /kalm/ 'calm',
 f. /kæRN/ 'cruX', etc., all of which are subject to schwa-insertion, i.e. /ʃɔlək/, etc., with a gap for /*ln/.

Final clusters under (c), (d) and (e) can be followed by /s/, creating final CCC clusters, as in /mɛlks/ 'milk-2SG', /fiæRfs/ 'autumn', /ziŋks/ 'sing-2SG', /kɔɟts/ 'cold-INFL'. In loans, other coda clusters occur, such as /sp/, as in /βesp/ 'wasp'. A striking difference with Standard Dutch is that no final obstruent+/t/ clusters occur, as shown by /blɔf/ 'bark-3SG', /æx/ 'real', /lœp/ 'walk-3SG', /dia:læk/ 'dialect', all of which have Dutch cognates with final /t/. The Maastricht dialect has /t/ in the underlying representation in cases of alternation, cf. the plural form /dia:læktə/. Lastly, /ŋ/ cannot occur word-initially in either Standard Dutch or Maastricht, while word-final /n/ after schwa, which is variably deleted in Standard Dutch, is categorically excluded in the Maastricht dialect.

Vowels

The Maastricht vowel system for stressed syllables comprises 21 monophthongs and three diphthongs. All of these except /ɛ:/ are listed in Houben (1905) and van Buuren (1991). In addition, there is [ə], which is restricted to unstressed syllables. Below, the monophthongs are split out according to the intersecting dimensions length and tenseness. The tense-lax distinction follows traditional terminology, but may resolve purely as vowel height.

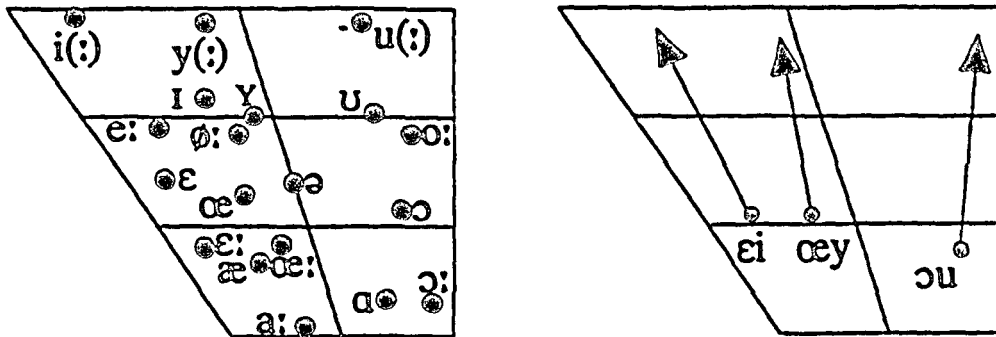
Lax Short			Tense Short		
i	hin	'chicken'	i	bis	'animal'
y	stym	'voice'	y	brytʃə	'breadroll'
ɛ	bet	'bed'	u	ʃun	'beautiful'
æ	tʃælf	'twelve'			
œ	bœs	'bus'			
a	bats	'buttock'			
ɔ	kɔp	'head'			
ʊ	pʊp	'doll'			
Lax Long			Tense Long		
ɛ:	kre:m	'cream'	i:	li:s	'list'
œ:	vœ:l	'much'	y:	kry:s	'cross'
ɔ:	plɔ:ts	'place'	u:	u:t	'out'
			e:	le:f	'dear'
			ø:	bø:k	'books'
			o:	fiɔ:f	'garden'
			a:	ba:s	'boss'
Diphthongs			Unstressed only		
ei	drei	'three'	ə	ət	'the'(neuter)
œy	bœym	'trees'			
ɔu	blɔu	'blue'			

The short lax vowels must be followed by a coda consonant. In words like /ʃimə/ 'chickens', in which a short lax vowel in a non-final syllable is followed by a single consonant, the intervocalic consonant is ambisyllabic, i.e., closes one syllable and opens the next. There are a number of interjections that violate this generalisation: /ju/ 'yes?', /jæ/ 'yes but...', /mæ/ 'but', which indicate various speech acts, and /ba/ 'yuck!'.

Before coda /ʀ/, short /i,y,u/ and the diphthongs /ei,œy,ɔu/ do not occur, while the short lax vowels are rare before word-final /ʀ/. No contrasts between /ɛ/ and /æ/, /y/ and /œ/, and /u/ and /ɔ/ exist before nasals: the vowels that appear in this position can be identified as /æ/, /y/ and /ɔ/, as in /pæn/ 'pen', /yn/ 'onion', /zɔn/ 'sun'. Minimal pairs before obstruents and /l/ are /ves/ 'fish' - /væs/ 'waistcoat', /ʀys/ 'Russian' (noun) - /ʀœs/ 'peace, rest', /stɔp/ 'stop' (imp - /stup/ 'pavement', /ʃelt/ 'peel-3SG', /ʃælt/ 'vituperate-3SG'.

The vowels /ɛ:,œ:,ɔ:/ are somewhat opener than mid-open, in particular /ɔ:/, which is realised [ɔ:]. The three diphthongs have closer starting points than the three

corresponding diphthongs in the standard language, while the first element of /ɔu/ is rounded, unlike that of Standard Dutch /au/ (Gussenhoven 1999).



Vowels plus glide

In addition to the three diphthongs, there are a number of permissible combinations of monophthongs and the approximants /β,j/ in the coda. Like the diphthongs, these are pronounced as vocalic tongue glides, and the available phonetic space is thus exploited quite intensively.

	Short vowel + glide		Long vowel + glide		
yj	nyjt	'invite-3SG'	ej	be:j	'offer-1SG'
æj	næj	'stingy'	øj	fjø:j	'hats'
ɔj	bɔj	'horse'	œj	drœ:j	'wires'
ɔj	fɔj	'pooh'	aj	ajt	'old'
uj	duj	'thaw'	ɔj	lɔ:j	'drawer'
			o:j	ko:j	'cow'
iβ	iβ	'century'	No occurrences of V:β		
aβ	kaβ	'cold'			
æβ	klæβkə	'claw-DIM'			

The qualities of these vowel-glide combinations are predictable from those of the constituent segments. Thus, /mɔβ/ 'mew-IMP' has an open, unrounded vowel, while /mɔu/ 'sleeve' has a mid-open, rounded first element, just as /fiæjs/ 'glove' has an opener vowel than the first element of the diphthong in /fiɔis/ 'hoist'. Since the end points of the diphthongs are close (if combined with Accent 1, see below), the phonetic differences are to be found in the first halves of the tongue glides. However, the subtlest distinctions involving vowel+glide combinations and other vocalic nuclei are probably those between the monophthongs /e:,ø:/ and the same vowels followed by /j/, as the mid-close long monophthongs are slightly diphthongal in final position (if combined with Accent 1, see below). Thus, /de:/ [de:] 'that (one)' does not rhyme with /be:j/ 'offer-1SG', and neither does /kø:/ [kø:] 'billiard cue' with /kø:j/ 'cow' (pl.). (There is no rhyme */o:β/ to rival the similarly diphthongal /o:/.)

Glide-insertion applies between /i(:), y(:), u(:), e:, ø:, ei, œy, ɔu/ and a following vowel, with [β] occurring after back vowels and /y/, and [j] after (other) front vowels, as in /sniə/ [snijə] 'snow-INF', /dyo:/ [dyβo:] 'duo', /bo:a/ [bo:βa:] 'boa (shawl)'; there is no evident phonetic difference between the inserted glides and other occurrences of /β,j/. Speaker-to-speaker variation, with no evident social correlate, occurs between /ɔu/ (if combining with Accent 1, see below) and /ɔj/, as in /vɔul/ ~ /vɔjl/ 'dirty', and between /ɑβ/ and /ɑj/, as in /ʎɑβde:f/ ~ /ʎɑjde:f/ 'crook'.

Stress

Stress location is as in Standard Dutch. Main stress is regularly on the penult, as in /ɑmbras/ 'fuss', /bɑmpa/ 'grandfather', /vəkansi/ 'holiday', /fə'mili/ 'family'. However, words with final closed syllables containing long vowels or consonant clusters have main stress on the final syllable, as in /ʀɪpə'blik/ 'republic', while words with more than two syllables with a closed final syllable and an open penult have antepenultimate stress, like /ɑlfa:βet/ 'alphabet'. Words with exceptional main stress on the antepenult include /do:mino/ 'dominoes', and words with exceptional final stress, like /mɑ'tras/ 'mattress', /pʀo:sə'de/ 'recipe, procedure', are not infrequent. Also, some words, like /hɔspitɔ:l/ 'hospital', fail to have the expected final main stress.

Tone

The dialect has an intonational system much like that of Standard Dutch and Standard German. Utterances are organised into intonational phrases (IP's) containing one or more pitch accents marking accented syllables, the last of which is the nuclear pitch accent. In combination with different final boundary tones (indicated by T_i), the nuclear pitch accent (indicated by T^*) expresses the usual discursal meanings. For instance, $H^* Li$, or the nuclear fall, seems to be a frequently used intonation, while $H^* Hi$, i.e. the nuclear rise, or, other than in IP-final syllables, $H^* LiHi$, i.e. the fall-rise, may be used for interrogation or continuation. Narrow focus is expressed by deaccenting words occurring after the nucleus that express 'old information'.

Unlike the dialect described in Heijmans & Gussenhoven (1999), but like many other Limburgian and Central Franconian dialects in the Netherlands, Belgium and Germany, the Maastricht dialect has a lexical tone contrast, traditionally known as *stoottoon* 'punch tone' and *sleeptoon* 'drag tone', here referred to as 'Accent 1' and 'Accent 2', respectively (cf. Schmidt 1986, Gussenhoven & van der Vliet 1999). There are durational and vowel quality differences between these two patterns, in addition to differences in pitch. As suggested by the term 'drag tone', syllables with Accent 2 are longer than those with Accent 1. Like the dialects of Roermond (Gussenhoven, to appear) and Venlo (Gussenhoven & van der Vliet 1999), the Maastricht dialect restricts the opposition to stressed syllables containing (at least) two sonorant moras. Thus, no contrast is possible in syllables containing a short vowel followed by an obstruent, such as /kɔp/ 'head'. However, in contrast to what is found in Venlo and Roermond, it is variably found in words in which the short vowel is followed by an ambisyllabic sonorant consonant.

Speaker FA appears to have it only in /fɪymə/ 'singlet', which he pronounces with either Accent 1 or Accent 2. Houben (1905) lists a number of words with this structure, like /brɪŋə/ 'bring', as having Accent 2. The Maastricht dialect further confines the tonal opposition to stressed syllables whose rhymes contain one of the following segmental structures:

- (1) a short lax vowel plus sonorant consonant other than /β,j/;
- (2) a mid-close vowel (/e:,ø:,o:/) or /a/, unless followed by /j/ - recall that /β/ does not cooccur with long vowels in the rhyme;
- (3) /i:,y:,u:/ if followed by /r/ in the coda;
- (4) a diphthong (/ei,œy,ɔu/).

The tonal contrast thus does not occur outside the syllable with main stress: in /klei'a:f/ 'clothing' and /kɛmɔu/ 'virago' the unstressed syllables have neither Accent 1 nor Accent 2. Accent 2 is marked [ˉ] before the syllable concerned, while Accent 1 is left unmarked. (None of the words cited so far in this article have Accent 2.) Examples of minimal pairs are /vɔl/ 'trap' - /ˉvɔl/ 'fall', /zɪŋk/ 'sing-3SG' - /ˉzɪŋk/ 'zinc', /ɣə'be:t/ 'territory' - /ɣə'ˉbe:t/ 'set of teeth', /spø:lə/ 'rinse' - /ˉspø:lə/ 'play', /tɔ:k/ 'task' - /ˉtɔ:k/ 'roof', /ka:rt/ 'move quickly-3SG' - /ˉka:rt/ 'card', /ɔux/ 'eye' - /ˉɔux/ 'also', /beɪ/ 'bee' - /ˉbeɪ/ 'near'. There are no minimal pairs for /i:,y:,u:r/, but /ki:r/, 'time, occasion', /fi:y:r/ 'hear-1SG', /u:r/ 'ear', for instance, have Accent 1, while /pə'ˉpi:r/ 'paper', /ˉvy:r/ 'fire', /ˉmu:r/ 'wall' have Accent 2. Some ten to fifteen nouns have Accent 1 in the plural and Accent 2 in the singular, but are segmentally identical. Examples are /ˉbeɪn/ 'leg', /ˉbærx / 'mountain', /ˉærm/ 'arm', /ˉdærm/ 'colon, intestines', /ˉkœrf/ 'basket', /ˉpe:rt/ 'horse', /ˉstein/ 'stone', /ˉvœrm/ 'form', /βe:x/ 'road', /βœrm/ 'worm'. In the remainder of this section, we first discuss the phonetic realisation of the tonal opposition, and then speculate briefly about the gaps in its distribution.

The phonetic differences between the two tonal patterns are complex. First, as made clear above, syllables with Accent 2 are considerably longer than syllables with Accent 1. Approximate durations for short and long vowel-plus-sonorant rhymes with these two prosodic patterns in monosyllabic words spoken in isolation are 250 ms (e.g. /bɔl/ 'party'), 350 ms (e.g. /ˉbɔl/ 'ball'), 260 ms (e.g. /stein/ 'stones'), 410 ms (e.g. /ˉstein/ 'stone'). The vowel /a/ is very noticeably lengthened before nasal+stop combinations in syllables with Accent 2, as in /kɑmp/ [ˉkɑ:mp] 'comb'; a more extreme form of this lengthening is a low-prestige feature of the dialect. (Words with this segmental make-up and Accent 1 are rare, but do exist, like /brant/ 'burn-3SG'). In the case of /ɔ/, the product of the same kind of lengthening is felt to be /o:/, as in /ko:nt/ 'behind (Noun)'.

Second, the three diphthongs have strikingly different qualitative allophones when occurring with Accent 2: they are monophthongised, the quality being that of the starting point of the diphthong as occurring in other contexts, often followed by just a hint of the second element. (Both Houben and van Buuren note the monophthongisation of diphthongs with Accent 2.) By contrast, the pronunciation with Accent 1 is fully

diphthongal, with the second elements pronounced closer than in the corresponding diphthongs in the standard language. Thus, the second members of the minimal pairs /bei/ 'bee' - /ˌbei/ 'near', /lœy/ 'people' - /ˌlœy/ 'lazy', and /dœuf/ 'dove' - /ˌdœuf/ 'deaf' are realised as [ˌbɛiː^(j), ˌlœɛː^(y), ˌdœuː^(u)f], whereas the first members are pronounced with short, wide diphthongs. The monophthongised diphthongs are subtly different from the mid-open monophthongs /ɛː,œː,ɔː/, which are somewhat opener and purely monophthongal. On the surface, therefore, the monophthongised realisation of the diphthongs with Accent 2 makes for a rich set of phonetic vowel oppositions, as illustrated by, for instance, /e:t/ 'eat-IMP', /ˌfi:t/ [ˌfiː^(j)t] 'hot', /tɛ:t/ [tɛːt] (*de veau*) 'brawn', /ø:s/ 'our', /ˌstrœys/ [ˌstrœː^(y)s] 'ostrich', /kœ:s/ [kœːs] 'choice', and /pɔ:s/ 'pause', /ˌpɔ:s/ [ˌpɔː^(u)s] 'pope', /pɔ:s/ [pɔːs] 'Easter (as first element in a compound)'. By contrast, the phonetic difference between, for instance, /ˌstrœys/ 'ostrich' and the Accent 1 word /strœys/ 'strew-2SG' is very salient. The mid-vowels /ɛː,øː,ɔː/, too, are purely monophthongal when combining with Accent 2, and weakly diphthongal when combining with Accent 1, particularly in word-final position (see above).

Third, the fundamental frequency of syllables with Accent 2 differs from those with Accent 1. In view of its effect in utterances with Accent 2 as compared with equivalent utterances with Accent 1, it is reasonable to assume that Accent 2 is a H-tone occurring in or immediately after the stressed syllable. However, the pitch distinction is not always present, and requires particular intonational conditions to be observed. Three such situations are listed and illustrated.

1. When Accent 2 occurs on the final syllable of an intonational phrase and is focal, such as when a monosyllabic word with Accent 2 is given in citation form, there is mid level or weakly rising pitch, with an optional fall at the end. By contrast, Accent 1 is pronounced with a steep fall from high to low. Accent 1 is lexically toneless, and so the representation of the steep fall on /bal/ in /ix fiœbə 'bal/ 'I'm having a PARTY' is probably a pitch accent H* followed by a boundary Li, while that of the mid tone plus optional fall on /bal/ in /ix fiœbənə 'ˌbal/ 'I have a BALL' would then be H*H Li. This can be seen in panels a and d in Figure 1, respectively. The lexical H (panel d) is pronounced at mid pitch, and is responsible for the realisation of H* at mid pitch as well as for the fact that Li is not always fully realised. Such truncation of contours in which many tones need to be pronounced within a short time is quite common (cf. Ladd 1996: 133).
2. A second situation in which the tonal effect of Accent 2 is apparent is when it occurs on a pre-final focal syllable in the IP. The representation of the contour on the accented syllable is thus H*H, which is followed by Li on the final syllable. The lexical H prevents Li from reaching fully low pitch. By contrast, the representation for the corresponding case with Accent 1, H* Li, is realised with fully low final pitch. This is illustrated in panels b and e in Figure 1, which give speech wave forms and F0 contours for the minimal pair /ˌɣeistə 'spø:lə/ 'Are you going to RINSE?' - /ˌɣeistə 'ˌspø:lə/ 'Are you going to PLAY?'.

3. Third, when an utterance with early (i.e. narrow) focus spoken with a H* Li intonation contour contains a word with Accent 2 in the post-focal section, the pitch contour shows a peak in the post-focal contour, indicating the presence of the lexical H. In panels c and f in Figure 1, the minimal pair / β elt si: ne:t spø:lə/ 'Doesn't she WANT to rinse?' - / β elt si: ne:t⁻spø:lə/ 'Doesn't she WANT to play?' illustrates this. The height of the peak for such post-nuclear realisations of Accent 2 (panel f) is quite

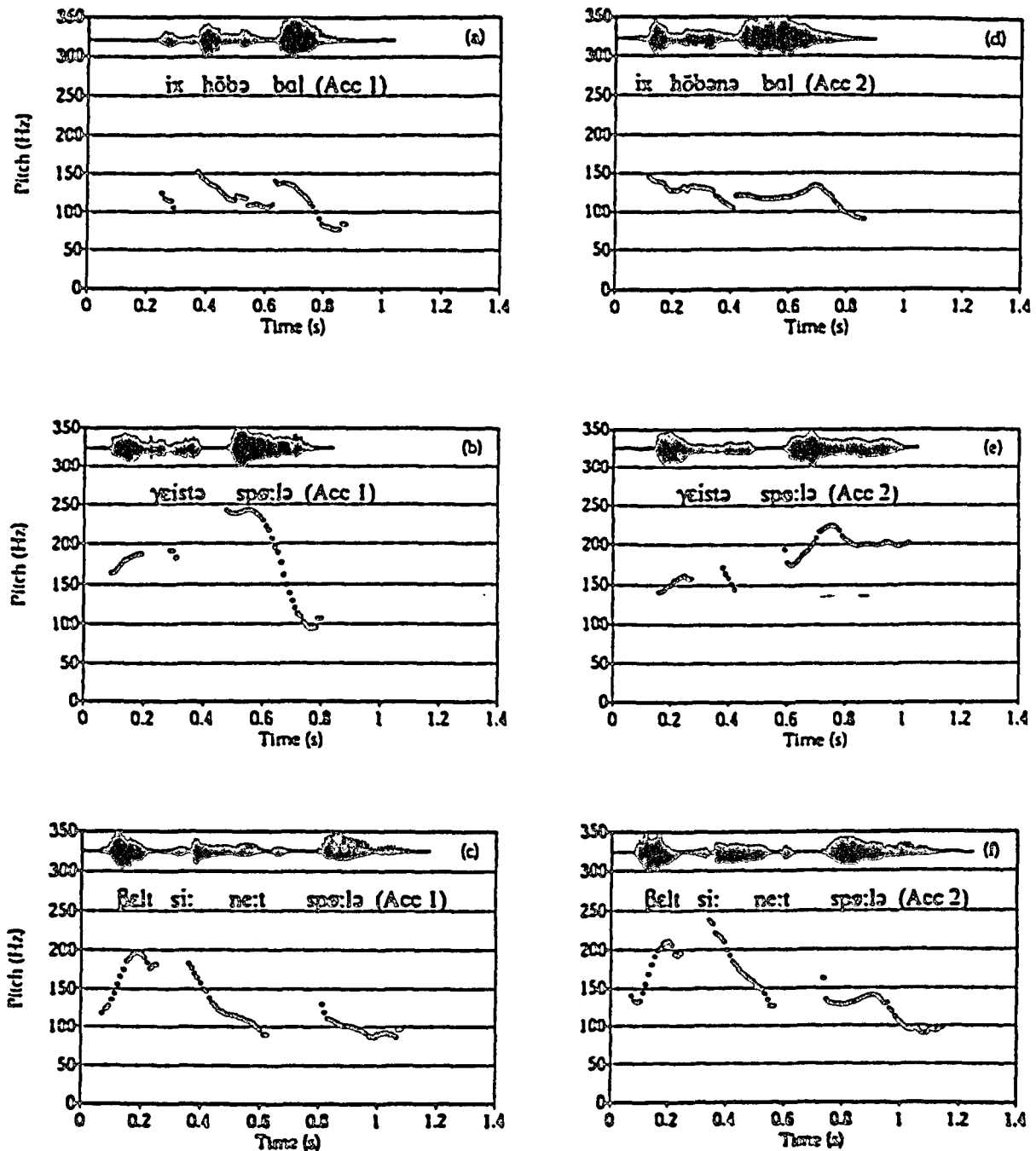


Figure 1. Speech wave forms and F0 tracings of three minimal pairs illustrating the tonal character of Accent 2 in accented IP-final syllables (Accent 1, panel a; Accent 2 panel d), accented pre-final syllables (Accent 1, panel b; Accent 2, panel e), and unaccented pre-final syllables (Accent 1, panel c; Accent 2, panel f). Pitch analysis and graphics produced with the help of the phonetics package Praat (Boersma & Weenink 1992-2000).

variable, and higher realisations in particular are easily misinterpreted as accents by speakers of non-tonal varieties of Dutch.

Overall, to the non-native ear, the phonetic differences between Accent 1 and Accent 2 in the dialect of Maastricht seem more salient than in the dialect of Venlo, provided the listener is aware that pitch is not the only phonetic feature to pay attention to. Somewhat unexpectedly, for words from an unspecified set of 15 minimal pairs, de Bot, Cox & Weltens (1990) found a mean correct score of only 63% with listeners who only judged one member of those minimal pairs.

The distribution of the tonal contrast over the segmental rhyme types given above seems quite erratic. Thus, the contrast does not combine with long mid open vowels, with high tense vowels unless these are followed by /r/ in the coda, or with any vowel if followed by /β,j/ in the coda. There is one thing, however, that these contexts have in common. The phonetic space within which the tonal contrast would have to be made is very small. The grammar has apparently winnowed out these contrasts because, given the phonetic resources available for articulating the contrast - monophthongisation, lengthening and higher pitch - perceptibility is too low in these contexts. We discuss each case in turn.

First, the absence of the contrast on mid open vowels is to be understood in the light of the monophthongisation of diphthongs with Accent 2. Although this monophthongisation is phonetic, i.e. gradient, non-categorical, its effect is that toneless mid open vowels contrast with longish, monophthongised diphthongs with mid open starting points (Accent 2), as explained above. This means that splitting the mid open vowels into two types which in many intonational contexts could only be distinguishable by duration would strain the system considerably.

Second, the context before /r/ is the only context in which /i:,y:,u:/ do not contrast with /i,y,u/. Therefore, the duration of the long vowels can be exploited to enhance the tonal contrast in a way that is unavailable for those same vowels in other contexts. In fact, the quantity opposition in the close tense vowels (i.e. /i,y,u/ vs. /i:,y:,u:/) has been incorrectly equated with the tonal opposition. For instance, in his list of Maastricht vowels, Houben (1905:1-5) lists vowel variants that are spoken with "dragging tone" (*op slependen toon gesproken*) (in the case of short lax vowels, with examples before sonorant consonants) and variants that "are sustained longer than" (*langer aangehouden dan*) in the case of /i,y,u/, /e:,ø:,o:/ and the three diphthongs. (He fails to mention "sustained" variants of the open long vowels, implicitly ruling out a contrast on /a:/.) The quantity difference between /i,y,u/ and /i:,y:,u:/ is also collapsed with the distinction between Accent 1 and Accent 2 by van Buuren (1991), who claims that there is not in fact a tonal contrast anywhere. He describes the difference between Accent 1 and Accent 2 as a durational one, on a par with the quantity difference in the high tense vowels. Native speakers, too, may identify /i,y,u/, as in /zi/ 'sea', /bry:tʃə/ 'bread roll+DEM', /bru:/ 'bread', as having Accent 1 and /i:,y:,u:/, as in /zi:/, 'she, they', /bry:tʃə/ 'bride-DEM', /bru:u/ 'bride', as having Accent 2, and may designate syllables with long mid open vowels as having

Accent 2. However, there is a crucial difference between words like /vy:R/ and words like /brux, vœ:l/: the former will have the pitch features illustrated in the righthand panels of Figure 1, while the latter will not.

Third, the monophthongisation of /ei,œy,ɔu/ and the otherwise weakly diphthongal /e:,ø:,o:/ with Accent 2 implies that diphthongisation in long vowels is a cue for Accent 1. If the contrast between Accent 1 and 2 is excluded in syllables closed by /β,j/, a general association between Accent 2 and absence of syllable rhymes with tongue glides can be made on the surface. It is presumably the preservation of this association that causes this particular gap in the distribution of the tonal contrast.

Transcription of passage

In the transcription, || indicates the end of an utterance, and | the end of an intonational phrase within an utterance. The stress mark ['] indicates an accented syllable, and [˘] designates a syllable with Accent 2.

Since Maastricht does not have a standard spelling, we give the passage in Standard Dutch orthography.

De noordenwind en de zon hadden een drukke discussie over de vraag wie van hun tweeën de sterkste was, toen er juist iemand voorbij kwam die een dikke, warme jas aanhad. Ze spraken af dat wie de voorbijganger ertoe zou krijgen zijn jas uit te trekken de sterkste zou zijn. De noordenwind begon uit alle macht te blazen, maar hoe harder hij blies, des te dichter de voorbijganger zijn jas om zich heen trok. Uiteindelijk gaf de noordenwind het maar op. Daarna begon de zon krachtig te stralen, en meteen daarop trok de voorbijganger zijn jas uit. De noordenwind moest toen wel toegeven dat de zon de sterkste was.

də '˘no:rdəβɪnt æn də 'zɔn | hɑdən ən 'drœkə dɪs'kysɪ ˘ø:vər də 'vrɔ:ɪx |
 βe: vɑn hɪnən 'βiə də '˘stærkstə βɔ:R | tʉn 'zys i:mɑnt vø:R'˘bei kɔ:m | de:
 nən 'dikə βærmə 'jɑs ɔ:mɦɑt ||
 zə sprɔ:kən 'ɔ:f | tɔt βe: də vər'˘beɪyæŋər dətɔu zɔu 'kri:yə | zənə
 'jɑs ʉ:t tə trækə | də '˘stærkstə zɔu zɪn ||
 də '˘no:rdəβɪnt bæyʉs ʉ:t 'ɑlə mɑx tə '˘blo:zə | mæ βi 'ɦiældər tɔtər
 '˘blo:zdə | βi 'ɦjər də vər'˘beɪyæŋər zənə jɑs ɪm zɪx '˘ɦe:m trɔk ||
 ʉt'ɦeɪndələk ɔ:f tə ˘no:rdəβɪnt ət mæR 'ʔɔp ||
 dɔ:'nɔ: bæyʉs tə 'zɔn 'krɑxtəx tə 'strɔ:lə | æn mət'eɪn də'nɔ: trɔk tə
 vər'˘beɪyæŋər zənə 'jɑs ʉ:t ||
 də '˘no:rdəβɪnt mʉs tʉn βæl 'tɔu ˘yevə tɔtə 'zɔn də '˘stærkstə βɔ:R.

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