

Watching Dutch change: A real time study of variation and change in standard Dutch pronunciation¹

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ABSTRACT

This study investigates phonological variation and change in two varieties of standard Dutch: southern standard Dutch (spoken in Flanders, the northern part of Belgium) and northern standard Dutch (spoken in the Netherlands). A new source for studying language change in progress is introduced: archived recordings of radio broadcasts. The study covers the period from 1935 to 1993. Changes in progress are studied by a combination of insight and techniques from historical linguistics and sociolinguistics. The outcomes of analyzing separate linguistic variables are presented, but the focus of the analysis is on the presence of more general patterns of covariation within the set of linguistic variables and on the possibility of distinguishing (prototypical) temporal and community-based varieties of standard Dutch. The results reveal a pattern of divergence between the two varieties of standard Dutch. The southern variety remained more or less stable between 1935 and 1993. Northern standard Dutch, however, changed substantially.

KEYWORDS: Sound change, Dutch, standard language, media language, linguistic covariation, real-time study

1. INTRODUCTION

Dutch is a Germanic language spoken in the Netherlands (15 million speakers) and Flanders (5.6 million speakers). The unity of language in the two communities is officially recognized in a treaty. They use the same spelling system and collaborate in the production of dictionaries and grammars. However, in recent decades, two closely related standard varieties have arisen: northern standard Dutch (NSD) in the Netherlands and southern standard Dutch (SSD) in Flanders. The differences between these varieties are,

relatively speaking, small and of the same order as those between different national varieties of German in Austria, Germany and Switzerland. NSD and SSD are mutually intelligible, but a speaker of standard Dutch is immediately recognized as of Dutch or Flemish origin. The most salient differences are found on the level of pronunciation and lexis (cf Donaldson 1983). A sketch of the historical facts leading to the development of two standard varieties can be found in e.g. Donaldson (1983), Geerts (1988), Van de Craen and Willemyns (1988), Willemyns (1988), Vandeputte, Vincent and Hermans (1995) and Van de Velde, Gerritsen and Van Hout (1996).

In the last thirty years, both laymen and linguists have observed that the pronunciation of standard Dutch is changing. Nowadays, there is an obvious difference in pronunciation between Flanders and the Netherlands, although the southern pronunciation standard (Flanders) was modelled upon the northern one (the Netherlands) at the end of the 19th century. Complaints about the decay of standard pronunciation in the Netherlands have been arising for years, as it is increasingly influenced by colloquial speech from the large urbanized area in the west of the country (the Randstad). Until now, these changes have not been studied systematically, nor in enough detail.

The main aim of this study is to describe patterns of variation and change in northern and southern standard Dutch pronunciation. A set of phonological variables was selected and studied and their distribution patterns will be given. The focus of the analysis, however, is on the presence of more general patterns of covariation in the set of linguistic variables and on the possibility of distinguishing community-based and temporal varieties of standard Dutch. Two techniques for analysing covariational linguistic patterns will be applied, factor analysis and multidimensional scaling. The results indicate that more general patterns of change can be distinguished and that these patterns are transferable to specific (prototypical) varieties.

In the past, linguists never collected and archived speech recordings with enough systematicity to be able to recast them in the form of a corpus somehow representative of standard Dutch speech and usable for the study of language change. We want to show how changes in standard varieties can be studied in real time. Therefore, a new type of source is introduced for the study of language change in progress: archived recordings.² We chose recordings of radio broadcasts, since the only preserved recordings of (spontaneous) speech are generally radio transmissions. Our study focusses on both northern and southern standard Dutch and covers the period 1935–1993.

It is clear that in applying this new method certain conditions had to be fulfilled. First, preserved recordings had to be usable from a technical point of view. Since the mid thirties, a sufficient number of recordings of an acceptable sound quality have been preserved. Second, it had to be shown that radio language is appropriate for the study of variation and change in standard varieties. A third condition relates to the research methods applied. The standard approach in historical linguistics (a real time study based on preserved

(written) sources) was combined with insights from sociolinguistics (focussing on language variation and spontaneous speech). Such a combination of methods can only be successful if oral sources can be found which are comparable over time. These conditions will be elaborated below. A final point is that our results should show whether quantitative Labovian techniques are appropriate for the study of variation and change in standard varieties. These techniques have mainly been used to study non-standard varieties (Bauer 1994).

2. RADIO LANGUAGE AND STANDARD LANGUAGE

Recordings of radio programmes are excellent sources for the study of stylistic variation, as is shown by Bell (1984, 1991). Radio is the mass medium in which attention is primarily focussed on language itself, more than, for example, on television where visual stimuli play an important role. Moreover, a reporter's style of presentation and speech are his or her sole instruments for identifying with the audience: they create the relationship between communicator and audience (Bell 1984: 192). In mass media, broadcasters' expectations of the audience monitor speech. Communicators on national stations address and/or identify with the language community as a whole. Therefore, the standard language is the most accepted variety (cf Krech et al. 1964; Leitner 1980; Strassner 1983; Bell 1991; Van Poecke and Van Den Bulck 1991). The most important arguments determining the choice for the standard variety is its maximal intelligibility, its high social prestige, and its image of objectivity and reliability. At the same time, the use of a language variety in the national mass media plays a crucial role in the standardization of this variety (Lotzmann 1974: 66; Bell 1991: 7).

There is also a fascinating interplay between radio language on the national stations and standard language, in which the audience defines the standard (Milroy and Milroy 1985). Broadcasters accommodate to the standard, but this does not mean that their usage coincides exactly with the abstract standard. Small deviations are evident. If, according to the listeners, who consider the speech of broadcasters representative of the standard, these deviations fall outside the range of variation tolerated within the standard, they will react in an attempt to redefine the standard. Consequently, recordings of radio programmes can be excellent sources for the study of variation in standard languages. The speech of professional broadcasters for the national broadcasting corporations, and especially that of newsreaders, is regarded as standard speech in most language communities (Bell 1983), including Belgium and the Netherlands. If broadcasters' speech is a real reflection of current norms in the standard language, it also mirrors ongoing changes in standard speech. Radio programmes are therefore a potentially excellent source for the study of language change.

However, it is evident that not all speech produced on the radio by

professional broadcasters can be considered standard. Transmissions appropriate for our study of variation and change in standard Dutch pronunciation had to meet three criteria, which relate to the comparability of the speech selected. First, the selected recordings had to be comparable over time. Programme types had to be chosen that were produced during the period covered by our study and that, in addition, were actually preserved in the radio archives. Newscasts, for instance, which exemplify standard speech par excellence, could not be used since they are generally not preserved in the archives. Second, the selected broadcasts had to have a single-layered audience. Multi-layered audiences can cause style shifting (Goffman 1981: 234ff; Bell 1991: 85ff) towards non-standard varieties, which would have threatened the comparability of speech samples. Consequently, we selected (parts of) broadcasts consisting of monologues and intended for direct communication to the mass media audience. Third, to be representative of the standard variety, the broadcasts had to be targeted at a national audience of people from all over the country, males and females of all ages and social classes. The selection of such broadcasts would minimize the risk of a considerable shift in the composition of the target audience over time.

An additional fourth criterion relates to speaking mode. We preferred full spontaneous speech since it offers better insight into patterns of language variation and change. Compared to reading, less hypercorrection occurs in spontaneous speech, and reading style is often accompanied by rather conscious speech monitoring strategies (Labov 1972). Only two types of programmes met these four criteria: radio broadcasts of royal reports and sports commentaries.

Two problems may arise when using preserved recordings of radio broadcasts for the study of language change. On the one hand, the results could be biased by the deformalization over time of the radio medium. We will return to this problem in the final section of the paper. On the other hand, the observed changes could be the result of a shift in reporter selection procedures at the broadcasting corporations. Our study of the language policy at the Flemish and Dutch broadcasting corporations showed that this is not the case (cf Van de Velde 1996b). There is, however, a large difference in their language policy.

The Flemish broadcasting corporation has always had a very clear language policy. One of the main purposes of the Flemish broadcasting corporation was the propagation and spread of Flemish culture, including standard Dutch.³ Until recently, a very normative language policy was implemented with rigorous internal controls by a language adviser. Currently, a more functional and communicative approach is being used, which considers standard Dutch as the ideal medium of expression for communicating information. In entertainment programmes, however, non-standard varieties are also used. Furthermore, the language adviser's task has shifted from correcting to advising. Nevertheless, all professional broadcasters have to pass a very strict pronunciation test. Even the slightest regional characteristics are not tolerated. This explicit choice for standard Dutch can be understood in the context of the historical position of

Dutch in Flanders. French had been the language of culture for several centuries in Flanders. In 1898, Dutch was recognized as an official language and in 1932 it became the only official language in the Dutch-speaking northern part of Belgium. The broadcasting corporation played a dominant role in the spread and propagation of the new language of culture in Flanders. Meanwhile, *BRT-Nederlands* (Belgian Radio and Television Dutch) became synonymous with southern standard Dutch.

In the Netherlands, the situation is totally different. In contrast with Flanders, Dutch has been the language of culture for several centuries. The Dutch broadcasting corporation also has a different structure. Various sociopolitical groups have their own broadcasting institutes, which are grouped in the Dutch broadcasting corporation. They cooperate in the production of live transmissions of big events. The Dutch broadcasting institutes have never had an explicit and normative language policy, but have always used standard Dutch as the language of broadcasting on functional and communicative grounds.

3. DESIGN OF THE STUDY

In the previous section, we mentioned that our criteria for selection were met by two types of programmes: royal reports and sports commentaries. The selected parts of the broadcasts contained only spontaneous speech. Royal reports broadcast royal happenings such as weddings, funerals, and inaugurations; sports commentaries were live broadcasts of e.g. soccer, cycling, track and field, speed-skating, and swimming.⁴

A distinction was made between the northern variety of standard Dutch as it is spoken in the Netherlands, and the southern variety as it is spoken in Flanders. The oldest archived Dutch radio broadcasts go back to the mid 1930s.⁵ Hence, it was possible to cover a period of sixty years. For the Netherlands, we selected transmissions with an interval of fifteen years, giving five measurement years: 1935, 1950, 1965, 1980, and 1993. Due to the lack of archived recordings in Flanders, different intervals were chosen. As well as 1935 and 1993 recordings, we selected programmes from 1965. To avoid interference through differences in apparent and real time, it was important to select speakers of approximately the same age. We chose male reporters between 29 and 36 years of age at the time of the recording. In Flanders, the age requirements were, necessarily, handled less strictly. As the intervals between the measurement periods are larger than in the Netherlands, the difference seems justifiable.

The design of our study is summarized in Table 1. The external factors are labelled as community (the Netherlands vs. Flanders), programme type (royal reports vs. sports commentaries), and period. For northern standard Dutch (NSD, the Netherlands) each cell is filled with five different speakers matching the requirements formulated above. For southern standard Dutch (SSD, Flanders) each cell is filled with three speakers. This seemed acceptable since,

Table 1: Design of the study of variation and change in standard Dutch speech (1935–1993): number of speakers broken down by community, programme type, and period (N=68)

		1935	1950	1965	1980	1993
The Netherlands	Royal	5	5	5	5	5
	Sports	5	5	5	5	5
Flanders	Royal	3		3		3
	Sports	3		3		3

on the basis of preliminary research (Cassier and Van de Craen 1986), less variation and change were expected in the southern standard than in northern standard Dutch. The corpus consists of 68 speakers, 50 Dutch and 18 Flemish. Ten minutes of spontaneous speech was gathered for every speaker, with a minimum of 1100 words. The corpus is made up of approximately 108,000 words. This research can be characterized as a retrospective trend study.

4. THE PHONOLOGICAL VARIABLES

Criteria for selection

Two main criteria were used for the selection of the phonological variables: relevance and researchability. First of all, a potential variable had to be relevant from the point of view of language variation and change. Indications had to be found in the literature or in contemporary language usage that a potential variable was involved in a process of sound change, or that the variable differed between northern and southern standard Dutch. Consequently, we started with an extensive study of the twentieth century literature on standard Dutch pronunciation. During the global orthographic transcription of the tapes potentially interesting features were noted (cf Wolfram 1993). We took advantage of our familiarity with both varieties of standard Dutch. Some phonologically closely related variables, e.g. the voiced fricatives (v), (z), and (g) and the long mid vowels (ee) and (oo), were selected to detect whether these subsets show similarities, and whether and how they take part in general linguistic processes. To test the validity of the research method, some variables were selected for which the linguistic conditioning had been studied in previous synchronic research. This applies in particular to the fricatives, which have been studied in standard Dutch (e.g. Gussenhoven and Bremmer 1983; Slis 1986) and vernacular speech (e.g. Brouwer 1989; Van Hout 1989). In addition, some variables that have been wrongfully neglected in Dutch socio-linguistic studies, such as (r) and word-final (n) deletion, were studied.

Researchability also played a crucial role in the selection of the linguistic

variables. The size of the corpus (ten minutes of speech for each speaker) imposed limitations on the nature of the linguistic variables. To get a reliable picture of language variation, it is necessary to study an item a number of times in a comparable context. Hence, the corpus is less appropriate for the study of syntactic change and our study is limited to phonological variables. Even for these variables, we were confronted with the limitations of the corpus. In spontaneous speech, a variable may occur very frequently in some contexts, but be very infrequent in other contexts. For example, word-final schwa + /n/ is rare in monomorphemic words (e.g. *deken* 'blanket'), but very common in polymorphemic words where it is a suffix used for the formation of plural verbs and nouns. Often, an unequal distribution of a phoneme over contexts is related to the phonological structure of the language. In standard Dutch, for example, voiced fricatives do not occur in syllable-final position. Due to the limited amount of speech by each speaker, the corpus is less suitable for the study of linguistic parameters governing the changes.

The sound quality of the recordings also had consequences for the selection and analysis of the variables. Recording techniques in the 1930s were not as sophisticated as modern ones. The frequency range and amplitude of the grammophone discs were small in comparison with those of the 1950s and the magnetic tapes used in more recent times. The sound quality of old recordings is also affected by storage. Discs and tapes can be damaged and old discs commonly have a lot of surface noise. Since we selected live recordings, the speech signal was often disturbed by background noise (shouting, singing, music, passing horses and cars, etc.). As a result, acoustic analyses of these recordings were not possible. Consequently, the phonological variables were coded using traditional sociolinguistic techniques. All transcriptions were made by the first author, a Fleming. For parts of the material and in dubious cases, consensus transcriptions were made with the Dutch co-authors.

Definition of the variables

Eleven phonological variables were examined.⁶ The main focus was on obtaining an adequate view of the most important changes in standard Dutch, not on a detailed analysis of the linguistic factors conditioning these changes. Hence, the study of the phonological variables is limited to specific, well-defined contexts in which the results cannot be biased by phonological and lexical peculiarities. For an overview of the phonological system of Dutch we refer to Booij (1995). The pronunciation of Dutch is described by Collins and Mees (1981), Mees and Collins (1982, 1983), Donaldson (1983), and Gussenhoven (1992). Goossens (1973) gives an overview of the differences in pronunciation between the Netherlands and Flanders. These descriptions, however, are not based on systematic observation or on extensive quantitative research. Below, we define the eleven phonological variables and describe the variants distinguished. For every variable, an index score was calculated on the

basis of these variants, ranging between 0 and 100. We formulated a rough estimation on the basis of the literature, which is elaborated in Van de Velde (1996b). An overview of the most important observations about the fricatives can also be found in Gussenhoven and Bremmer (1983) and in Van de Velde, Gerritsen and Van Hout (1996), and about the long mid vowels in Van de Velde (1996a).

(v). The voice character of the labio-dental voiced fricative /v/ was studied in syllable-initial intersonorant position. This is a context favouring voicing. The voiced /v/ cannot devoice in this context as a result of assimilation of voice to the preceding or following segment. For every speaker, twenty observations in word-initial position (*vuur* 'fire', *voet* 'foot') and twenty in word-internal position (*bevelen* 'to order', *lever* 'liver') were coded (n=2676). Three degrees of voicing were distinguished:

1. voiceless [f]
2. partially voiced realizations [v̥] (Laver 1994: 340)
3. fully voiced [v].

The index ranges from 0 (completely voiceless) to 100 (completely voiced). In the 20th century literature on pronunciation in Dutch, an increasing tendency towards devoicing of /v/ is observed in NSD. This tendency is not reported in SSD.

(z). The voice character of /z/ was, like (v), studied in syllable-initial intersonorant position. Twenty observations in word-initial position (*zuur* 'sour', *zoet* 'sweet'), twenty in word-internal position (*bezoeken* 'to visit', *lezer* 'reader') were transcribed (n=2489). Three degrees of voicing were distinguished:

1. voiceless [s]
2. partially voiced realizations [z̥]
3. fully voiced [z].

The literature identifies a tendency to devoice /z/ in NSD. Devoicing of /z/ is described as being weaker than for /v/ (Gussenhoven and Bremmer 1983; Van Hout 1989; Voortman 1994). It is not reported in SSD.

(g)voice. The voice character of /ɣ/ was, like (v) and (z), studied in syllable-initial intersonorant position. Twenty observations in word-initial position (*guur* 'bleak', *goed* 'good'), twenty in word-internal position (*vergeten* 'to forget', *leger* 'army') were transcribed (n=2441). Three variants were distinguished:

1. voiceless
2. partially voiced
3. fully voiced realizations.

Most speakers of NSD pronounce /ɣ/ as a voiceless fricative (Zwaardemaker and

Eijkman 1928; Slis and Van Heugten 1989). Most observations claim that /ɣ/ is voiced in SSD.

(g)place. Together with the voice character, the place of articulation of /ɣ/ was studied. Three places of articulation were distinguished:

1. uvular
2. velar
3. palato-velar.

The index ranges from 0 (uvular) to 100 (palato-velar). The higher the index score, the more fronting used in realizing (g). One of the salient differences between NSD and SSD is the place of articulation of /ɣ/. SSD has a so-called 'soft g' (velar or palato-velar), modern NSD has a 'hard g' (uvular). According to observations in the literature, the uvular is a modern prestige variant which replaced the old standard velar realization (Mees and Collins 1982; Boves 1992: 81).

(g)scrape. A third characteristic of (g) studied was the absence or presence of *scrape* in its articulation. The index ranges from 0 (no scrape) to 100 (always scrape). Heavy scraping was only identified in NSD, especially among young speakers. In the 1920s, it was considered non-standard (Van Haeringen 1924).

(r)place. The most variable sound in the Dutch language area is probably /r/ but, due to its complexity, it is also one of the least studied. Very diverse aspects of Dutch /r/ are discussed in De Schutter, Taeldeman and Weijnen (1994). In SSD, there are two variants: the alveolar trill and the uvular trill. The latter has apparently gained in popularity in the last decade. In NSD, particularly in post-vocalic coda position, /r/ is a chameleon (Vieregge and Broeders 1993: 269).⁷ Alveolar and uvular trills, taps, fricatives, and different types of vocalic and retroflex realizations occur, as well as complete deletion of post-vocalic /r/. These variants could not all be ordered on one ordinal or interval scale. In our research we distinguished ten different realizations of /r/. It was studied in a strictly defined context to avoid biasing of the data by linguistic factors. For every speaker, twenty occurrences of /r/ after a fully stressed vowel were transcribed. There was an equal spread over two contexts:

1. word-final position (*zwaar* 'heavy', *duur* 'expensive'), vowels, semi-vowels and liquids were excluded as following segments, since they can trigger spread of /r/ to the onset of the following syllable and/or influence the nature of /r/
2. post-vocalic /r/ followed by word-final /t/ or /d/ (*zwaard* 'sword', *buurt* 'neighborhood') (n=1304).

As the number of observations was rather low and the number of variants high, a frequency analysis was insufficient to gain insight into the realization of (r). To

get an overview of the more general patterns of variation and change, the different variants were grouped along five phonetic dimensions. Because of the high correlations between four of them (cf note 6), only two are presented in this paper: (*r*)*effort* (articulatory effort) and (*r*)*place* (place of articulation). For the latter, a distinction was made between [+front] and [-front] realizations. The index ranges from 0 [+front] to 100 [-front].

(*r*)*effort*. In increasing order of articulatory effort four categories were distinguished:

1. zero realizations
2. vocalic realizations
3. untrilled consonantal realizations: fricatives, taps, and flaps⁸
4. trilled realizations of /r/: [r] and [R]. The higher the index score (ranging from 0 to 100), the more articulatory complex is the realization of (r). According to the literature, articulatory reduction of /r/ only occurs in NSD, not in SSD.

(*n*). For each speaker, thirty occurrences of the bound morpheme *-en* in word-final position were transcribed (n=1978), spread equally over three types of words. The preceding syllable contains a full vowel. Nasals as following segment were excluded, since it is often not possible to detect whether the observed [ŋ] also belongs to the preceding syllable. Three types of words were selected: plural nouns (*huizen* 'houses', *deuren* 'doors'); plural forms of predicators (*wij spelen* 'we play', *zij speelden* 'they played'); and infinitives (*zij moeten blijven* 'they must stay'). Four variants were distinguished and ranked:

1. realizations of (n) as [ə], with total absence of a nasal element
2. realizations of (n) in which a very slight nasal element can be heard
3. realizations of (n) as [əŋ], with full schwa and a full nasal (the place of articulation of the nasal can assimilate to the place of articulation of the following consonant)
4. syllabic realizations [ŋ]. This variant, which is generally considered non-standard, is extremely rare in our corpus (n=21).

As variants 3 and 4 share full realization of the nasal element, [əŋ] and [ŋ] were combined for the calculation of the index scores. The lower the score, the more deletion of /n/. Van Haeringen (1951: 122) observed that the amount of (n) deletion increases over time in NSD. In SSD, the amount of (n) deletion seems to be related to the regional background of the speaker (Pauwels 1969). It is also observed that the amount of (n) deletion is related to stylistic factors: the more formal the speech, the fewer deletions of /n/. As such, if there is an increase in (n) deletion in our corpus, it may be interpreted as deformalization of the medium of radio, instead of language change.

(*ee*). For each speaker fifteen occurrences of /e:/ in an open position, carrying word stress and followed by an obstruent plus schwa within the same foot, were

transcribed (*leven* 'to live', *weken* 'weeks') (n=963). In this context diphthongization occurs less than in wordfinal position (Voortman 1994), but in our corpus the number of occurrences of /e:/ (and also /o:/) in word-final position was too low to be studied quantitatively. Three degrees of diphthongization were distinguished:

1. pure monophthongal realizations [e]
2. slightly diphthongized realizations [e^ɪ]
3. diphthongal realizations [ei].

The index ranges from 0 (completely monophthongal) to 100 (fully diphthongized).

(*oo*). For each speaker fifteen occurrences of /o:/ in an open position, carrying word stress and followed by an obstruent plus schwa within the same foot, were transcribed (*roken* 'to smoke', *rozen* 'roses') (n=919). Three degrees of diphthongization were distinguished:

1. pure monophthongal realizations [o]
2. slightly diphthongized realizations [o^ɪ]
3. diphthongal realizations [oi].

The index ranges from 0 (completely monophthongal) to 100 (fully diphthongized). Diphthongization of the long mid vowels is typical for modern NSD. Wide diphthongs – [ɔu] for (oo) and [ɛi] for (ee), with lowering of the first element – are very common in Randstad urban dialects and in colloquial Randstad speech, but did not occur in our corpus, at least, not in the context we studied. They are observed in word-final position, as in *zee* 'sea' and *zo* 'so'. According to the literature, /e:/ and /o:/ are pure monophthongs in SSD.

(*ei*) For each speaker, fifteen occurrences of the diphthong /ei/ carrying word stress and not immediately followed by a vowel, liquid or nasal were transcribed (n=1006), e.g. *beleid* 'policy', *strijdbaar* 'militant'. To find enough occurrences of (ei) in the corpus, the context was less strictly defined than for (ee) and (oo). Three variants were distinguished:

1. monophthongal realizations [ɛ]
2. slightly diphthongized realizations [ɛ^ɪ]
3. diphthongal (=standard) realizations [ɛi].

The index ranges from 0 (completely monophthongal) to 100 (fully diphthongized). Wide diphthongal realizations [ai], with lowering of the first element, did not occur in our corpus in the context studied. These realizations are common in colloquial Randstad speech and in some Randstad urban dialects (e.g. Rotterdam and Amsterdam vernaculars have wide diphthongs, but monophthongal realizations also show up in The Hague [ɛ:] and in Amsterdam [a:]). Blancquaert (1934) points out, in all reprints of his pronunciation guide,

that Flemish speakers sometimes show a tendency to monophthongize / ϵ i/, which he explicitly condemns as being non-standard.

Words and syllables that are often reduced in connected speech (e.g. *even* 'just'), as well as unclear realizations, were excluded from transcription. Proper names and foreignisms were also excluded from the analysis. To avoid the effect of repetition, the second realization of a word following within seven seconds of the first realization was not transcribed, unless the realizations clearly differed. If the same word recurred three times in a short time span, no further transcriptions of that word were made for at least one minute of speech.

Results

The results for the phonological variables are presented in Table 2. In Van de Velde (1996b) detailed analyses are presented for each of these phonological variables. Van de Velde, Gerritsen and Van Hout (1996) report on the devoicing of (v), (z) and (g). The diphthongization of (ee) and (oo) is discussed in Van de Velde (1996a). These results will not be discussed in detail. The data presented in Table 2 are used for the interpretation of the analyses of the patterns of covariation discussed below in Section 5. Significant period effects (oneway, $p < .05$) are marked with an asterisk. An explanation for the values of the index scores (ranging from 0 to 100) is given on the right side of the table.

Significant differences were observed for all eleven phonological variables between northern and southern standard Dutch. As expected, most shifts observed in NSD did not occur in SSD. In 1993 there were very obvious differences between the northern and the southern pronunciation standards. For all periods, there is a large difference in the amount of variation between the Netherlands and Flanders: NSD showed a lot of variation, SSD almost none.

In SSD there are period effects for four variables. Three of them are unexpected: (v), (z) and (g)voice. Compared to those in NSD, the strengths of these effects were rather small and difficult to interpret (cf Van de Velde, Gerritsen and Van Hout 1996) since there are only 18 informants for SSD (six per period). There is slight devoicing of (v) and (z) in the 1993 data and a very slight opposite tendency for (g), which is commonly voiceless or partially voiced (cf Debrock 1977). There is also a significant period effect for (ei): there are less uncompletely diphthongized realizations of (ei) in the 1993 recordings than in the previous periods.

In NSD, there are significant period effects for nine variables. Eight of them show a straightforward pattern over time from an old to a new variant. The most obvious changes between 1935 and 1993 are the diphthongization of (ee) and (oo) and the devoicing of (v). The devoicing of (g) and (z) is also clear, but less strong in the period studied. The fricative (g) was already predominantly devoiced in 1935; (z) became devoiced in the last period of our study. There were also shifts for (g)place and (g)scrape: in 1993 particularly (g) had

Table 2: Scores for the linguistic variables broken down by variety and period: significant period effects marked by * (oneway, $p < .05$)

Variable	Variety	Period					Score values	
		1935	1950	1965	1980	1993	0	100
(v)	NSD	87.3	77.7	84.1	68.4	37.2 *	– voice	+ voice
	SSD	99.1		99.0		86.4 *		
(z)	NSD	90.9	94.2	94.7	83.9	62.4 *	– voice	+ voice
	SSD	98.1		98.0		84.8 *		
(g)voice	NSD	20.8	4.6	1.9	7.7	4.8 *	– voice	+ voice
	SSD	32.6		34.6		43.2 *		
(g)place	NSD	19.5	21.5	28.5	21.0	10.0 *	uvular	palato- velar
	SSD	60.0		55.5		56.5		
(g)scrape	NSD	11.9	13.0	9.0	13.5	36.1 *	– rasp	+ rasp
	SSD	0.0		1.5		0.0		
(r)place	NSD	54.6	68.8	59.1	83.1	62.2	+ front	– front
	SSD	93.3		99.1		83.3		
(r)effort	NSD	67.3	60.2	59.7	59.6	44.2 *	simple	complex
	SSD	99.7		96.2		97.5		
(n)	NSD	5.5	10.5	7.7	4.5	4.4	– n	+ n
	SSD	28.2		19.7		24.3		
(ee)	NSD	5.2	24.0	42.1	70.6	79.2 *	– diph	+ diph
	SSD	0.6		0.0		0.0		
(oo)	NSD	2.7	2.5	27.6	65.7	66.2 *	– diph	+ diph
	SSD	0.6		0.0		0.6		
(ei)	NSD	91.3	87.0	82.6	94.3	94.5 *	– diph	+ diph
	SSD	75.0		70.4		91.1 *		

become harder, i.e., uvular, quite often in combination with heavy scrape. Post-vocalic (r) clearly reduced between 1935 and 1993 in NSD. These results are consistent with our general expectations for these variables. The diphthong (ei) shows another pattern in NSD: an unexpected tendency towards weaker diphthongization in 1965 is reversed now. However, as stated, the wide diphthong [ai] has not yet occurred in the corpus. There are no period effects for (r)place and (n). These variables did not seem to follow the general pattern of shifting in NSD. The general patterns of covariation are analysed in the following section.

5. PATTERNS OF COVARIATION

Autonomous variables and global structure

The separate linguistic variables used in our study obviously reveal processes of change in NSD, and a concomitant pattern of divergence between the NSD and SSD varieties. We may even conclude that the basic pattern of change is repeatedly and therefore convincingly confirmed in the set of the variables studied, despite the fact that clear differences show up in the degree to which a more global pattern of change has arisen for the different linguistic variables. The mere possibility of drawing such a conclusion directed towards a more global patterning seems to validate the research practice current in sociolinguistics of keeping linguistic variables separated when their distribution pattern is analyzed. In general, a strong emphasis has been put on the relative autonomy of linguistic variables. Sociolinguistics has mainly focussed on a detailed analysis of separate linguistic variables and variable rules at the cost of the quantitative study of the co-occurrence or covariation of linguistic variables.⁹

However, two obvious counter-arguments can be asserted for assuming some form of systematic coherence or covariation between linguistic variables. The first argument relates to the role and impact of linguistic relationships between variables. It is, for instance, fairly plausible that a more general process of strengthening underlies the devoicing of the three fricative variables (*v*), (*z*) and (*g*), and that the related vowel variables (*ee*) and (*oo*) are bound by the same underlying linguistic conditions (Van de Velde 1996a; Van de Velde, Gerritsen and Van Hout 1996). The second argument relates to the comparable impact a more general process of change may concurrently have on different language elements. The same process is mirrored then, one way or another, throughout a whole series of changing language elements or variables. The consequence is some form of covariation between the linguistic variables.

The question is how more global structures can be studied in larger sets of linguistic variables. Two different types of multivariate analysis seem to be possible, one which focusses on the relationships between the *linguistic variables*, and one which focusses on the relationships between the *speakers*. This distinction leads to two different approaches:

A covariation analysis of linguistic variables. The most evident tool for determining the degree of covariation between linguistic variables is a correlation coefficient. The result of calculating all possible correlations between the variables is a correlation matrix. Factor analysis can be applied to investigate whether the variables in question have something in common, and to what degree these variables can be reduced to more general underlying factors (other terms are 'dimensions' or 'components'). The point of departure in the analysis is the correlation matrix. Numerous applications of factor analysis can be found

in linguistics (e.g. phonetics, language testing, psycholinguistics, language attitudes; cf Rietveld and Van Hout 1993 for an overview and statistical information concerning the application of this technique). It has been used before in sociolinguistic research, but only infrequently (e.g. Ma and Herasimchuk 1972; Horvath and Sankoff 1987). Its application is fairly common in studies on register variation (Biber 1988) and in Dutch sociolinguistic research (cf Van Hout 1995). In the next section, a principal component analysis (the most common technique in factor analysis) will be used to find out whether one or more general factors can be distinguished in our set of linguistic variables.

A similarity analysis of speakers. Multidimensional scaling is another widely applied type of statistical analysis (cf Kruskal and Wish 1994 for an explanation of this technique). Its purpose is to discover structural relationships in a set of objects (our speakers). The point of departure is a measure of similarity or dissimilarity for each pair of objects. Generally a dissimilarity or distance measure is applied, which means that larger differences between objects are reflected in larger dissimilarities. Combining all pairs of objects gives a matrix with all possible (dis)similarities, which forms the input for the multidimensional scaling procedures. These scaling procedures aim at reproducing these dissimilarities (distances) as closely as possible in a reduced metric space, which means that the objects are represented in a spatial configuration, with as few dimensions as possible. The next step is to find an appropriate interpretation for the spatial configuration. This technique has seldom been applied in sociolinguistics, except by Sankoff and Cedergren (1976). The multidimensional scaling analysis is presented below.

Correlations and variables:

Extracting factors by Principal Component Analysis (PCA)

The first step in a principle component analysis is the determination of the number of components. This decision is determined by statistical arguments, as well as by the linguistic significance of the results. A common technique is to take into account all components having an 'eigenvalue' higher than 1. As can be seen in Table 3, the solution has three components. Another technique (based on statistical arguments) to determine the number of components is the scree test. There is a clear break in the eigenvalues between the fourth and fifth component. Since a solution with four components is easier to interpret in linguistic terms than one with three components, we opted for the former.

In Table 4, an overview of the loadings of the components of the phonological variables after quartimax rotation is presented.¹⁰ The highest loadings of the variables are printed in bold. The results reveal one main component with three smaller components. Component 1 represents the overall pattern of change in (northern) standard Dutch. The variables (ee), (oo), and (g)scape have a high negative loading on component 1. The variables (g)voice,

(g)place, (r)effort and (v) have a high positive loading. The characteristics of (g) can be summarized as the difference between 'hard g' and 'soft g'. (Partially) voiced, velar realizations of (g) without uvular vibration (soft g) are accompanied by voiced (v), monophthongal (ee) and (oo), and realizations of (r) demanding high articulatory effort (mainly trills and, to a lesser degree, taps). Vice versa, soft realizations of (g) (i.e. velar, unrasped, and sometimes partially

Table 3: Components of the PC-analysis: the eigenvalue, percentage of variance, and the cumulative percentage

Component	Eigenvalue	% Variance	Cumulative %
1	5.462	49.7	49.7
2	1.236	11.2	60.9
3	1.043	9.5	70.4
4	0.925	8.4	78.8
5	0.617	5.6	84.4
6	0.571	5.2	89.6
7	0.480	4.4	94.0
8	0.249	2.3	96.2
9	0.169	1.5	97.8
10	0.132	1.2	99.0
11	0.115	1.0	100.0

Table 4: Overview of loadings of the components (PC) of the phonological variables after quartimax rotation (the highest loadings in bold)

Variable	Components			
	1	2	3	4
(g)voice	.814	.263	.195	-.161
(g)place	.847	.013	.211	.141
(g)scrape	-. 744	.152	-.076	-.033
(r)effort	.849	.141	.214	.164
(ee)	-. 846	.183	.204	-.117
(oo)	-. 773	.208	.344	-.070
(v)	.723	-.575	.002	-.069
(z)	.448	-. 800	.031	-.041
r(place)	.284	-.067	.867	.051
(n)	.406	.183	-.061	.780
(ei)	-.319	.462	-.265	-. 621

voiced) are accompanied by devoicing of (v), diphthongization of (ee) and (oo), and reduced realizations of (r). Besides representing the overall pattern of change in standard Dutch, component 1 clearly distinguishes NSD from SSD, as can be seen in Figure 1.

In Figure 1 the results are split up by period (horizontal axis) and community. The scores of the speakers are plotted with a small symbol: o for northern standard Dutch, x for southern standard Dutch. The mean scores are marked by larger symbols and connected by a solid line (NSD) or a dashed line (SSD). Figure 1 reveals a clear pattern of divergence between NSD and SSD. There is a distinct difference between the two varieties of standard Dutch, which increases over time. This is confirmed by an analysis of variance which shows a two-way interaction, community by period ($F=22.094$, $df=2,42$, $p=.000$, $\eta^2=.129$). There are main effects of the factors community ($F=208.479$, $df=1,42$, $p=.000$, $\eta^2=.607$) and period ($F=24.359$, $df=2,42$, $p=.000$, $\eta^2=.142$).¹¹

As early as 1935 there were clear differences between NSD and SSD. In the latter variety no changes were observed over time (oneway, $F=2.588$, $df=2,15$, $p=.108$). In NSD, however, clear changes are evident between 1935 and 1993. There is a strong period effect (oneway, $F=22.166$, $df=4,45$, $p=.000$, $\eta^2=.663$), a gradual shift from an old variety of standard Dutch in 1935 to a modern one in 1993, with considerable overlap in variation between adjoining periods. In

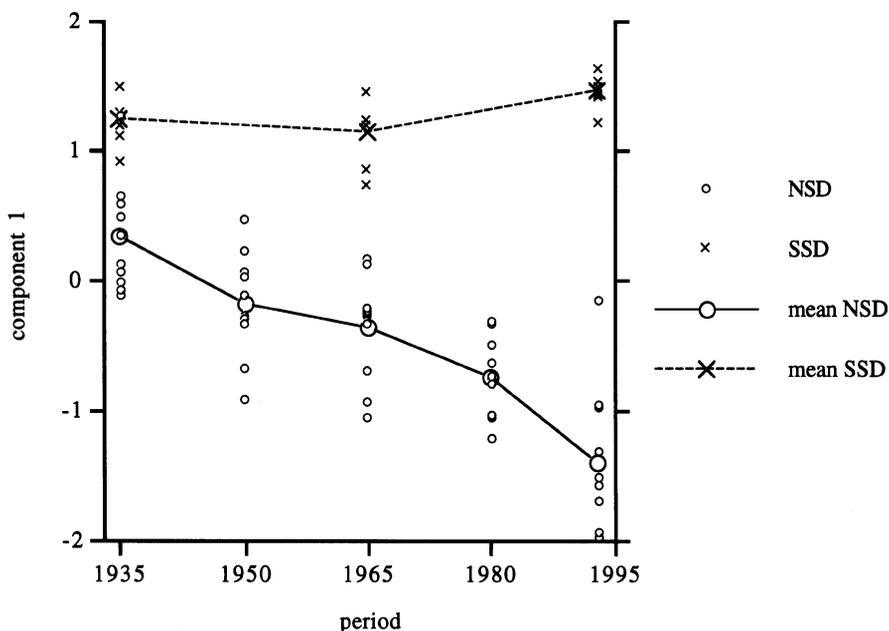


Figure 1: Scores of component 1 (PCA) broken down by community (NSD vs. SSD) and period

the last period, the overall shift in NSD seems to accelerate: there is an increase in the amount of variation and a steep descent in the curve connecting the mean sores.

The other components are less important and form three subpatterns of variation, in addition to the general one illustrated by component 1. The variable (z) has a high negative loading on component 2. (v) has a moderate negative loading on this component as well, but a much higher (positive) loading on component 1. It reveals the (linguistic) similarities between the devoicing of (v) and (z). The fact that (z) does not load high on component 1 also shows that (v) and (z) do not follow exactly the same pattern. (r)place is the only variable loading high on component 3, demonstrating a pattern of its own, and showing that the place of articulation of /r/ in standard Dutch is not related to other patterns of variation detected in our study. The fourth and final component is formed by (n) and (ei). Fully diphthongal realizations of (ei) co-occur with a high rate of n-deletion. This component distinguishes some of our Flemish speakers from the Dutch ones.

Similarities and speakers: Multidimensional scaling (MDS)

The first step in a multidimensional scaling analysis is to determine the number of dimensions. Besides goodness of fit, two important considerations play a role in choosing an appropriate dimensionality: interpretability and ease of use (Kruskal and Wish 1994: 350). The statistical information needed to determine the number of dimensions is presented in Table 5. For one- to five-dimensional solutions, Kruskal's stress value 1 (Stress) and the root mean square (RSQ) are given. Stress measures goodness of fit: the smaller the value, the better the fit. RSQ expresses the extent to which the variance in the disparities is explained by the distances in the configuration. The higher this value, the better. There is a clear break in the stress values between dimensions 1 and 2. Moreover, the goodness of fit of a one-dimensional solution is too low to be acceptable. Kruskal's Stress 1 is .209; to be acceptable it has to be lower than .150 (Kruskal and Wish 1994: 348). RSQ is also rather low (.879). Adding a second dimension brings both Stress (.102) and RSQ (.960) values to acceptable levels. Adding more dimensions does not markedly improve the goodness of fit, as can be seen in Table 5. A neighbourhood interpretation of the two-dimensional solution offers clear insight into the structure of the data and is interpretable in linguistic terms. In Figure 2, the solution is visualized. The speakers are split up by period and community (NSD versus SSD).

The Flemish speakers are clustered in the upper right corner of Figure 2. There is little variation on both dimensions. Dimension 1 represents change in standard Dutch, dimension 2 is mainly linked to the place of articulation of (r).¹² We therefore concentrated on the horizontal dimension in the data. The closer together speakers are on the horizontal dimension, the more similar their index scores are for the phonological variables indicating change in standard Dutch.

Table 5: Goodness of fit of 1 to 5 dimensional solutions: Stress (Kruskal's stress formula 1) and RSQ (explained variance) are given

Dimension	Stress	RSQ
5	.038	.991
4	.050	.986
3	.077	.973
2	.102	.960
1	.209	.879

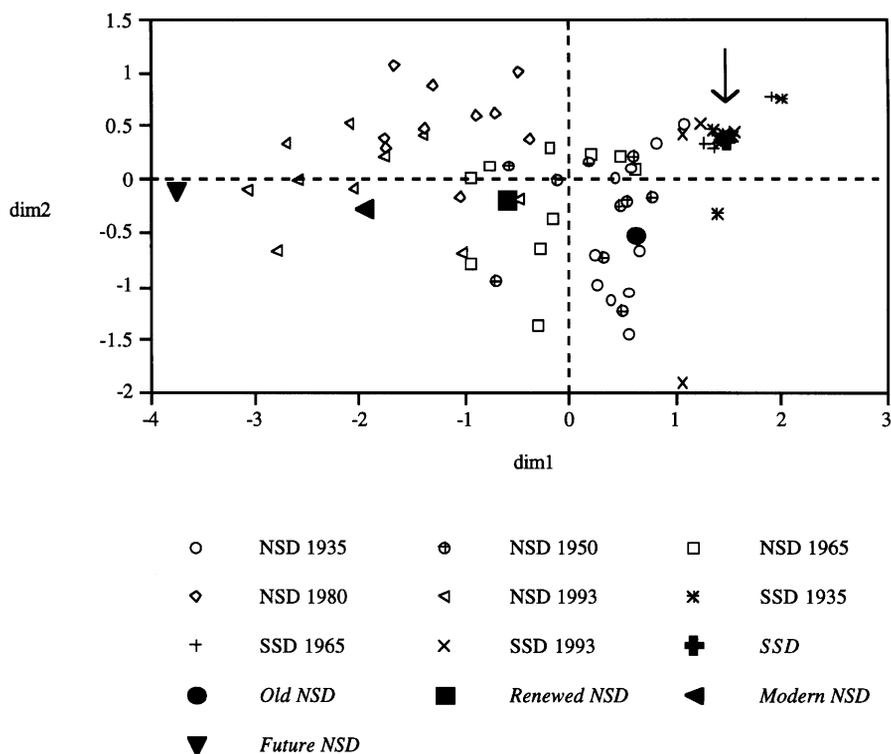


Figure 2: Plot of the two-dimensional scaling analysis. The speakers (N=68) are broken down by period and community (NSD = northern standard Dutch, SSD = southern standard Dutch). Prototypical speakers of five different varieties of standard Dutch are constructed and plotted with larger symbols. SSD can be found below the arrow, in the middle of the clustering of symbols.

There is obviously no shift in southern standard Dutch: all speakers are very close to each other. There are obvious differences between speakers of SSD and 1935 speakers of NSD.

The gradual shift in northern standard Dutch between 1935 and 1993 is clearly visible. The 1935 speakers are found to the right, just left of SSD speakers. From 1950 to 1993 we see the speakers moving towards the left side of the figure, drifting away from the Flemish speakers. There is considerable overlap between adjoining periods and a lot of variation for all periods, denoting the lack of a clear-cut pronunciation standard in the Netherlands between 1935 and 1993. As the differences on dimension 1 become larger on the left side, the speed of the shift seems to accelerate from the 1980s onwards.

Prototypical varieties: Composing speakers and variables

In this section the results of the factor analysis and the multidimensional scaling analysis will be linked. By combining the results of the covariation analysis of the 11 phonological variables with the similarity analysis of the 68 speakers, prototypical varieties of standard Dutch are constructed. These varieties are characteristic of a period, giving insight into the linguistic landscape. They are prototypes since they are not real speakers, but idealizations constructed on the basis of the analyses.

As shown by the statistical analyses of the patterns of covariation, northern and southern standard pronunciations have clearly diverged during the past sixty years. There are two quite distinct community (national) varieties of standard Dutch: NSD and SSD. This regional distinction was already envisaged in the design of the study, and the existence of the two varieties is confirmed by our investigation. There was a gradual and large shift in NSD between 1935 and 1993. Between the two endpoints, at least one intermediate phase can be distinguished. Due to the variation in all periods, speakers of adjoining periods show considerable overlap. In most periods, both conservative and progressive speakers are found, next to the 'normal' ones. It is therefore not possible to distinguish more than one prototypical variety between the old (1935) and the modern (1993) variety of NSD.

It may be possible to distinguish a total of four prototypical varieties: SSD, old NSD, renewed NSD and modern NSD. In Table 6, a schematic overview of the characteristics of these varieties is given. These characteristics are based on the results for the phonological variables (cf Table 2). The principal component analysis revealed which variables represent the overall pattern of change, and which variables show another pattern of variation. The left side of Table 6 lists the linguistic processes. The symbol \emptyset denotes that there is no trace of the process, + that it is in the incipient phase, ++ that it is in the advanced phase, and +++ that the process is completed. If two of these symbols are combined, there is a lot of variation for that variable. On the basis of these characteristics, a prototypical speaker has been constructed for each variety, as well as a future

speaker of NSD. These prototypes were given index scores, which are also presented in Table 6. The index scores of these five prototypical speakers, together with those of the 68 real speakers, were used as an input in a two-dimensional scaling analysis. The dimension scores for these five prototypical speakers were calculated and plotted with a larger symbol in Figure 2 showing the difference between NSD and SSD, and the pattern of change in the former. The techniques we applied were apparently successful.

Southern standard Dutch. SSD has changed little in sixty years. At the end of the 1930s, it was based on northern standard Dutch, and is the phonetic realization of the standard described in Blancquaert (1934), who had already

Table 6: Characteristics of prototypical varieties of standard Dutch

	SSD	Old NSD	Renewed NSD	Modern NSD	Future NSD
devoicing of (g)	+ 50	++ 25	+++ 0	+++ 0	+++ 0
uvularization of (g)	ø 50	+ 25	+ 25	++ 10	+++ 0
scraping of (g)	ø 0	+ 10	+ 10	++ 33	+++ 100
devoicing of (v)	ø 100	+ 90	+ 85	++ 33	+++ 0
devoicing of (z)	ø 100	ø 95	ø 95	+ 66	++ 33
diphthongization of (ee)	ø 0	ø 0	+ 50	++ 75	+++ 100
diphthongization of (oo)	ø 0	ø 0	+ 50	++ 75	+++ 100
monophthongization of (ei)	ø/+ 100	ø 100	ø/+ 100	ø 100	ø 100
reduction of (r)	ø 100	+ 66	+ 60	++ 40	++ 30
place of articulation of (r)	ø 100	ø/++ 50	ø/++ 50	ø/++ 50	ø/++ 50
realization of (n)	ø/+ 25	ø 0	ø 0	ø 0	ø 0

Legend: ø = no trace; + = incipient phase; ++ = advanced phase; +++ = completed. Index scores are those used to calculate the dimension scores of the prototypical varieties (cf Figure 2).

observed small differences between Flemish and Dutch pronunciation, and in De Coninck (1970). There is little variation. Due to the heavy clustering of the speakers, the prototypical speaker of SSD (dim1: 1.475; dim2: 0.376) is not clearly visible in Figure 2. Southern standard Dutch /y/ is velar and partially voiced. The fricatives /v/ and /z/ are fully voiced. The long mid vowels /e:/ and /o:/ are pure monophthongs. The realization of word-final /n/ after schwa is variable. For the most part /r/ is realized as [r], but [ʀ] is also evident. Some speakers show a tendency towards less diphthongized realizations of /ɛi/, which is explicitly condemned by Blancquaert (1934) and De Coninck (1970). Consequently, the prototypical speaker is given a full diphthongal realization of /ɛi/.

Old northern standard Dutch. Old NSD, as it was spoken by the 1935 reporters, does not coincide with the abstract standard propagated by teachers at Dutch schools for speech therapists, who played a substantial role in attempting to establish a unified pronunciation standard in the Netherlands. It shows considerably more variation than southern standard Dutch and clearly differs from the Flemish standard. The prototypical speaker of old NSD has dimension scores 0.629 and -0.529 . Velar, partially voiced or voiceless realizations of /y/ co-exist in old NSD with realizations that are uvular, voiceless and sometimes with heavy uvular vibration. Only in half of the cases is post-vocalic /r/ realized as a uvular or alveolar trill. The fricatives /v/ and /z/ are predominantly voiced. The vowels /e:/ and /o:/ are still pure monophthongs. Word-final post-schwa /n/ is generally deleted by speakers of NSD in all periods.

Renewed northern standard Dutch. In the 1950s and 1960s, some innovations occurred. The long mid vowels /e:/ and /o:/ started to diphthongize, /v/ devoiced and /y/ became almost exclusively voiceless. Its place of articulation is variable. /r/ is still in the process of reducing, and its place of articulation is variable. As the tendency towards less diphthongized realizations of /ɛi/ is limited to a small number of speakers, we considered the fully diphthongal realizations as prototypical (dim1: -0.594 ; dim2: -0.190).

Modern northern standard Dutch. Some characteristics of the modern variety of NSD in the 1980s and 1990s (dim1: -1.953 ; dim2: -0.269), are the ongoing diphthongization of /e:/ and /o:/, the strong devoicing of /v/ and /z/, and the heavy scraping of the uvular fricative. The trilled post-vocalic /r/ is almost completely absent. The place of articulation of /r/ is variable.

There are clear indications that devoicing of /v/ and /z/, uvularization and scraping of /y/, diphthongization of /e:/ and /o:/, and reduction of /r/ will progress in the coming years. On the basis of this assumption, we constructed a prototypical speaker of future NSD, which can be found on the left side of Figure 2, with dimension scores of -3.740 and -0.123 .

6. CONCLUSION AND DISCUSSION

It should be noted that our description of the prototypical varieties of standard Dutch is primarily valid for the type of speakers we selected: male broadcasters between 29 and 36 years old. For northern standard Dutch, there is much more variation in each of the periods, which is systematically linked with social factors such as sex, age and regional origin. However, our study offers a very reliable insight into the changes in northern standard Dutch and the increasing differences between NSD and SSD. A second comment is that we did not study the complete phonological system, nor all the changes that appear to be in progress according to observations in the literature.

It may be argued that it is impossible to compare broadcasts of different periods for the study of linguistic change, as the results of such a study would be biased by the deformalization of the medium of radio. In Van de Velde (1996b) and Van de Velde and Van Hout (1996) it is shown that this is not the case for our results. The deformalization of radio formats mainly occurred between 1965 and 1980 and coincided with some major shifts in standard Dutch pronunciation. There was a clear increase in speaking rate, the use of the pause filler (eh), and syllable lengthening. Utterances became shorter. The number of long silent pauses sharply decreased between 1935 and 1950. However, by means of a detailed analysis of the correlations of these variables with the phonological variables, it was shown that the results of the phonological variables are not biased by the deformalization of the medium of radio. The fact that we did not find period effects for the phonological variable (n), a variable sensitive to style, is an additional argument. Consequently, the period effects measured for the phonological variables in this study can be interpreted as linguistic change.

We have shown that some types of preserved broadcasts are excellent sources for the study of variation and change in standard language varieties. Recordings of royal reports and sports commentaries are comparable over time, and representative of standard Dutch, enabling us to study spontaneous speech. Furthermore, compared with, for instance, the speech of newscasts, this type of broadcast is less sensitive to the deformalization of radio (Van de Velde and Van Hout 1996). Since the mid 1930s recordings of radio transmissions of royal reports and sports commentaries have been preserved in sound archives. So, it is possible to cover a period of sixty years in real time. Traditional quantitative techniques appear to be useful for the study of variation and change in standard varieties. The combination of approaches from historical linguistics (a real time study based on preserved sources) and sociolinguistics (focussing on language variation and spontaneous speech) has proved successful.

Additionally, the analyses of the patterns of covariation were very successful: the principle component analysis revealed which phonological variables take part in the general pattern of shifting; the two-dimensional scaling analysis

offered insight into the structural relationship between the speakers. The combination of the results of both analyses enabled us to define prototypical community-based and temporal varieties of standard Dutch. We may conclude that, in addition to a detailed analysis of separate linguistic variables and variable rules, sociolinguistics should also focus on the analysis of patterns of covariation, as these analyses enable us to detect more global structures in the set of linguistic variables.

An important finding of this study is the strong divergence between northern and southern standard Dutch pronunciation. SSD appears to be rather stable, while NSD has changed dramatically since 1935. In NSD variation is high in all periods indicating that the Netherlands has never had a clearcut pronunciation standard in the 20th century. Beginning in the 1920s, some Dutch linguists tried to propagate a unified standard of pronunciation, but these attempts were not successful. Northern standard Dutch is an *Umgangssprache*. It is the colloquial speech of most middle and upper class speakers, used both formally and informally. The observed changes in NSD originate in the colloquial speech of the middle and upper classes in the Randstad, the urban area in the west of the Netherlands, with Amsterdam, The Hague, Rotterdam and Utrecht as the major cities. Since the 1980s, there has been an acceleration in the speed of the shift, a point needing further research. In the last quarter of the 19th century, Flemish linguists participating in the *Nederlandse Taal- en Letterkundige Congressen* (conferences on Dutch linguistics and literature) agreed on the existing pronunciation among upper class speakers in the Netherlands as the standard (cf Ternest 1872). Our study shows that there were already small differences between northern and southern standard pronunciation in the 1930s, which is also observed by Blancquaert (1934). It may therefore be concluded that the changes in northern standard Dutch pronunciation had already started by the turn of the century.

The Flemish pronunciation standard has hardly changed in sixty years and shows little variation compared with NSD. We may question why Flemish pronunciation is so stable and whether Flemish broadcasters' speech can be used for the study of variation and change in standard Dutch. First, SSD is not entirely stable and totally devoid of variation. We observed incipient changes for (v) and (z). There is a lot of variation in the realization of (n); (g) can be voiceless, partially voiced or voiced; and the place of articulation of (r) can be both alveolar and uvular. Second, there are changes in SSD at other linguistic levels. In contrast with divergence at the level of pronunciation, there seems to be a pattern of convergence at the syntactic and lexical levels (Van Coetsem 1970; Taeldeman 1992). Third, we observed changes in speech style in broadcasting Dutch: utterances became shorter between 1935 and 1993; speaking rate and the number of filled pauses increased; the number of unfilled pauses decreased in the speech of Flemish broadcasters. Therefore, we did not study a frozen type of speech.

Of course, compared to NSD, the changes in SSD are small. One important

factor influencing the rather stable nature of SSD is the history of Dutch in Flanders. It was not until 1932 that it was made the only official language in the Dutch-speaking part of Belgium. French had been the language of culture for several centuries, while Dutch was stigmatized in Flanders, as the language of the lower class. In addition, the very diverse dialects were not mutually intelligible and there was limited contact between Flanders and the Netherlands, where a standard variety of Dutch emerged. When the emancipation of Flanders started in the second half of the 19th century, a dominant and standardised variety of Dutch did not exist. Consequently, Flemish linguists adopted the standard variety already commonly written and spoken in the Netherlands. Standard Dutch is therefore originally an exogene language variety for Flemish speakers. From its foundation in 1930, the Flemish broadcasting corporation played a crucial role in the propagation of standard Dutch in Flanders (cf Section 2).

Even in the 1990s, only a small minority of the Flemish population speaks SSD fluently. Its usage is limited to formal circumstances. In less formal circumstances, Flemings (of all social classes) still use their dialect or a variety with minor adaptations towards the standard when communicating with people outside their own dialect area. Flemish broadcasting Dutch is the target most people aim at in formal circumstances, but most of them are not very successful in implementing this standard. The language variety they produce is heavily influenced by their dialect background and the formal written language. Their speech can be characterised as an interlanguage between dialect and standard Dutch. These very diverse interlanguages appear to be undergoing a process of standardization at the moment. Since the 1970s, many Flemish parents have tried to educate their children in standard Dutch. Dialect was considered deficient and seen as a threat to the spread of standard Dutch by most language politicians, who enforced a normative language policy towards adaptation of the northern standard (pronunciation excepted). To give their children a better chance in society, Flemish parents no longer spoke dialect to their children, but opted for the standard language, even though most of them had not mastered standard Dutch but spoke an interlanguage between dialect and standard Dutch. Consequently, for a lot of speakers younger than thirty, the local dialect is no longer the first language, but one of the interlanguages. Common terms to refer to these varieties are *Tussentaal* (interlanguage, Willemys 1970), *Verkavelingsvlaams* (allotment Flemish, Van Istendael 1993) or *Belgisch Beschaafd* (cultivated Belgian, Goossens 1970). Although the use of these varieties has increased in all circumstances, replacing both dialect and standard Dutch, the speech of the newscasters of the Belgian broadcasting corporation is still considered standard in Flanders (De Caluwe 1991). To a certain extent, the status and position of SSD in Flanders can be compared with that of Received Pronunciation in Great Britain.

Nevertheless, we expect that these dramatic changes in the Flemish linguistic

landscape, will become audible in broadcast speech very soon. In fact, they are already heard. Interlanguage is quite common on Flemish television, especially in entertainment programmes. The characteristics of *Verkavelingsvlaams* have not been studied systematically. An interesting point of research is the role of commercial broadcasting, which arose in Flanders in the early 1990s, in the spread and standardization of *Verkavelingsvlaams*.

The Dutch broadcasting corporations, which are located in the Randstad area, seem to have a crucial position in transferring characteristics of Randstad colloquial speech to standard Dutch. In contrast, the Flemish broadcasting corporation takes a more conservative stance, and tries to limit the introduction of colloquial non-standard features into the standard language. Although the Dutch and Flemish broadcasting corporations have a very different language policy, their usage continues to reflect the language norms in the respective societies. Consequently, media language allows us to study language change in progress.

NOTES

1. Preliminary versions of this paper were presented at the Sociolinguistics Symposium 11 (Cardiff, Wales) and at the workshop on 'Divergence and convergence of dialects across political borders' of the European Science Foundation (Ghent, Belgium). We thank the audiences for their comments and suggestions. Special thanks go to Walter Haas, Johan Taeldeman and Malcah Yaeger-Dror for their comments on a draft version of this paper.
2. Other researchers have occasionally used preserved recordings in studying language change. Brink and Lund (1975) used old phonograph recordings to deepen the time dimension in a study of Copenhagen vernacular. For the investigation of minor languages in Russia a large collection of grammophone discs recorded by dialectologists has been studied (Bondarko and De Graaf 1996). Prince (1987) used recordings from 1940 to 1979 of Sarah Gorby, a popular Jewish singer, to study dialect shift. Woods (1997) used recordings from the late 1940s for her study on the formation and development of New Zealand English. Recordings of Canadian radio broadcasts were used by Yaeger-Dror and Kemp (1992) in their study of sound change in Montreal French.
3. The first official Belgian broadcasting corporation, Radio Belgique, which was founded in 1923, broadcast exclusively in French. In 1930, the Belgian parliament decided to found a new national broadcasting corporation, with a Dutch speaking section for the Flemish provinces and a French speaking one for the Walloon provinces.
4. Royal reports are a more formal type of broadcasting than sports commentaries. However, since both contain exclusively spontaneous speech, and the reporter's expectations of the social and regional structure of the audiences are more or less the same, there are no systematic differences between the two programme types on the phonological level. Of course, there are obvious differences between royal reports and sports commentaries in e.g. speech rate (higher in sports commentaries) and

utterance length (longer utterances in royal reports). For an extensive discussion we refer the reader to Van de Velde (1996b).

5. The first broadcasting corporations were founded in the early 1920s. At that time, Edison's phonograph had been out of production for several years and high quality recording required a complicated and expensive technique. Consequently, all programs were broadcast live. As very often things went wrong in these direct transmissions, and since it was impossible to make programs outside a studio, technicians worked hard to develop simple recording equipment. In the early 1930s, the first lightweight graphophones were constructed, which the broadcasting corporations started using in 1933. A couple of years later, the Belgian and Dutch broadcasting corporations began archiving these recordings.
6. In Van de Velde (1996b), more phonological variables are discussed. The variables (s) and (f), the hypercorrection of /f/ to [v] and /s/ to [z], are not discussed here. Due to a very skewed distribution of the number of realizations across the speakers, it was not feasible to calculate index scores for these variables. For (r), five phonetic dimensions were distinguished. Three of them are not presented here as they have a very high correlation ($r > .90$) with (r)effort.
7. Also in other Germanic languages such as Danish, English, German and Swedish, post-vocalic /r/ tends to become a vowel or approximant, or even to disappear completely (Lindau 1985).
8. Among phoneticians the term *flap* is not always defined in the same way. Following Ladefoged (1993: 168) and Laver (1994: 142) we restrict it to retroflex realizations. The exact nature of the retroflex realizations in the Netherlands is a matter of debate among Dutch phoneticians. Mees and Collins (1982: 10), for instance, claim on the basis of unsystematic observations that it is not a true retroflex realization as the tongue-tip is not curled back or raised. We do not agree with this statement.
9. Covariation is a less strict form of co-occurrence. There is only a relative amount of dependency between the linguistic variables.
10. The most common rotation technique in PCA is varimax rotation, which maximizes the variance of the loadings in each column. It minimizes the number of variables loading high on a component. On the other hand, quartimax rotation maximizes the variance of the loadings in each row. It minimizes the number of components needed to explain a variable. Because we are looking for a general component illustrating change in standard Dutch, a quartimax rotation appears to be the appropriate technique (Brouwer and Van Hout 1984; Van Hout 1995). If the aim is to find subclusters within the set of variables, varimax is the appropriate technique.
11. In comparing the two countries, only the periods that are shared can be used in the analysis of variance, i.e. the oldest, middle and most recent periods (1935, 1965, 1993; cf Table 1). This explains the number of degrees of freedom for the effects in which the period factor is involved. In addition the period effect can be investigated for each community separately, in which case it has a larger number of degrees of freedom for the Netherlands.
12. Two speakers (53, 63) can be considered outliers, having a negative score on dimension 2, which is mainly determined by the place of articulation of (r) as is shown by multiple regression analyses of the phonological variables on the dimension scores. Speaker 53 shifts between [r] and [R], speaker 63 uses uvular [R] exclusively. All other Flemish speakers have an alveolar [r]. The results of the multiple regression analyses of the phonological variables on dimension 1 are consistent with those of the principal component analysis (high loadings on component 1, see Table 4).

REFERENCES

- Bauer, Laurie. 1994. *Watching English change: An introduction to the study of linguistic change in Standard Englishes in the twentieth century*. London: Longman.
- Bell, Allan. 1983. Broadcast news as language standard. *International Journal of the Sociology of Language* 40: 29–42.
- Bell, Allan. 1984. Language style as audience design. *Language in Society* 13: 145–204.
- Bell, Allan. 1991. *The language of news media*. Oxford: Blackwell.
- Biber, Douglas. 1988. *Variation across speech and writing*. Cambridge: Cambridge University Press.
- Blancquaert, Edgar. 1934. *Practische uitspraakleer van de Nederlandsche taal*. Antwerpen: De Sikkel.
- Bondarko, Lija V. and Tjeerd de Graaf (eds.). 1996. *Archives of the languages of Russia: Reports on the INTAS project No. 94–4758: The use of acoustic databases in the study of language change*. Saint Petersburg: Saint Petersburg University Publishing House.
- Booij, Geert. 1995. *The phonology of Dutch*. Oxford: Clarendon Press.
- Boves, Tom. 1992. *Speech accommodation in co-operative and competitive conversations*. PhD dissertation. Nijmegen: University of Nijmegen.
- Brink, Lars and Jørn Lund. 1975. *Dansk Rismål I-II. Lydudviklingen siden 1840 med særligt henblik på sociolekterne i København*. Copenhagen: Gyldendal.
- Brouwer, Dédé. 1989. *Gender variation in Dutch: A sociolinguistic study of Amsterdam speech*. Dordrecht: Foris Publications.
- Brouwer, Dédé and Roeland van Hout. 1984. Amsterdam vernacular: The analysis of style shifting and covariation. In Hans Bennis and Wus van Lessen Kloeke (eds.) *Linguistics in the Netherlands 1984*. Dordrecht: Foris Publications. 33–43.
- Cassier, Luc and Piet Van de Craen. 1986. Vijftig jaar evolutie van het Nederlands. In Jos Creten (ed.) *Werk in uitvoering*. Leuven: Acco. 50–73.
- Collins, Beverley and Inger Mees. 1981. *The sounds of English and Dutch*. The Hague: Leiden University Press.
- De Caluwe, Johan. 1991. Attitudes van Vlamingen tegenover de taal van het Noorden. In Marissa Demoor (ed.) *De kracht van het woord: 100 jaar Germaanse Filologie aan de RUG (Studia Germanica Gandensia 24)*. 51–64.
- De Coninck, Robrecht H.B. 1970. *Groot uitspraakwoordenboek van de Nederlandse taal*. Antwerpen: Uitgeverij De Nederlandsche Boekhandel.
- De Schutter, Georges, Johan Taeldeman and Antoon Weijnen (eds.). 1994. *R – zes visies op een kameleon* (Special issue (Themanummer 7) of *Taal en Tongval*).
- Debrock, Marc. 1977. An acoustic correlate of the force of articulation. *Journal of Phonetics* 5: 61–80.
- Donaldson, Bruce C. 1983. *Dutch: A linguistic history of Holland and Belgium*. Leiden: Martinus Nijhoff.
- Geerts, Guido. 1988. Language legislation in Belgium and the balance of power in Walloon-Flemish relationships. In Roeland van Hout and Uus Knops (eds.) *Language attitudes in the Dutch language area*. Dordrecht: Foris. 25–37.
- Goffman, Erving. 1981. *Forms of talk*. Philadelphia: University of Pennsylvania Press.
- Goossens, Jan. 1970. Belgisch Beschaafd Nederlands en Brabantse expansie. *De Nieuwe Taalgids* (Van Haeringennummer): 54–70.
- Goossens, Jan. 1973. De Belgische uitspraak van het Nederlands. *De Nieuwe Taalgids* 66: 230–240.
- Gussenhoven, Carlos. 1992. Dutch. *Journal of the International Phonetic Association* 22: 45–47.

- Gussenhoven, Carlos and Rolf H. Bremmer. 1983. Voiced fricatives in Dutch: Sources and present-day usage. *North-Western European Language Evolution* 2: 55–71.
- Horvath, Barbara and David Sankoff. 1987. Delimiting the Sydney speech community. *Language in Society* 16: 179–204.
- Krech, Hans et al. 1964. *Wörterbuch der deutschen Aussprache*. Leipzig: VEB Bibliographisches Institut.
- Kruskal, Joseph B. and Myron Wish. 1994. Multidimensional scaling. In Michael S. Lewis-Beck (ed.) *Basic measurement*. London: Sage. 301–387.
- Labov, William. 1972. *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.
- Ladefoged, Peter. 1993. *A course in phonetics*. Fort Worth: Harcourt Brace Jovanovich College Publishers.
- Laver, John. 1994. *Principles of phonetics*. Cambridge: Cambridge University Press.
- Leitner, Gerhard. 1980. B.B.C. English and Deutsche Rundfunksprache: A comparative and historical analysis of the language of the radio. *International Journal of the Sociology of Language* 26: 75–100.
- Lindau, Mona. 1985. The story of /r/. In Victoria A. Fromkin (ed.) *Phonetic linguistics: Essays in honor of Peter Ladefoged*. Orlando: Academic Press. 157–168.
- Lotzmann, Geert. 1974. Sprechwissenschaftliche Aspekte zur Aussprachenormierung des Deutschen. In Geert Lotzmann (ed.) *Sprach- und Sprechnormen*. Heidelberg: Groos. 65–83.
- Ma, Roxana and Eleanor Herasimchuk. 1972. Speech styles in Puerto Rican bilingual speakers: A factor analysis of co-variation of phonological variables. In Joshua Fishman (ed.), *Advances in the sociology of language II*. 's-Gravenhage: Mouton. 268–295.
- Mees, Inger and Beverley Collins. 1982. A phonetic description of the consonant system of Standard Dutch (ABN). *Journal of the International Phonetic Association* 12: 2–12.
- Mees, Inger and Beverley Collins. 1983. A phonetic description of the vowel system of Standard Dutch (ABN). *Journal of the International Phonetic Association* 13: 64–75.
- Milroy, James and Lesley Milroy. 1985. *Authority in language*. London: Routledge.
- Pauwels, Jan L. 1969. Eind-n na toonloze vocaal in Zuid-Nederland. *Taal en Tongval* 21: 216–218.
- Prince, Ellen F. 1987. Sarah Gorby, Yiddish folksinger: A case study of dialect shift. *International Journal of the Sociology of Language* 67: 83–116.
- Rietveld, Toni and Roeland van Hout. 1993. *Statistical techniques for the study of language and language behaviour*. Berlin: Mouton de Gruyter.
- Sankoff, David and Henrietta C. Cedergren. 1976. The dimensionality of grammatical variation. *Language* 52: 163–178.
- Slis, Iman H. 1986. Assimilation of voice as a function of stress, word boundaries, and sex of speaker and listener. *Journal of Phonetics* 14: 311–326.
- Slis, Iman H. and M. van Heugten. 1989. Voiced-voiceless distinction in Dutch fricatives. In Hans Bennis and Ans van Kemenade (eds.) *Linguistics in the Netherlands* (Volume 6). Dordrecht: Foris Publications. 124–132.
- Strassner, Erich. 1983. Rolle und Ausmass dialektalen Sprachgebrauchs in den Massenmedien und in der Werbung. In Werner Besch, Ulrich Knoop, Ulrich Putschke and Herbert Ernst Wiegand (eds.) *Dialektologie: Ein Handbuch zur Deutschen und allgemeinen Dialektforschung*. Berlin: Walter de Gruyter. 1509–1525.
- Taedeman, Johan. 1992. Welk Nederlands voor Vlamingen? *Nederlands van Nu* 40: 33–51.
- Ternest, Karel L. 1872. *Uitspraakleer der Nederlandse taal*. Gent: Annoot-Braeckman.

- Trudgill, Peter and Jean Hannah. 1982. *International English*. London: Edward Arnold.
- Van Coetsem, Frans. 1970. De rijks grens tussen Nederland en België, een in kracht afnemende taalgrens? In Antoon Weijnen and Frans Van Coetsem (eds.) *Zijn akker is de taal. Bundel opstellen aangeboden aan Prof. dr. Klaas Heeroma ter gelegenheid van zijn zestigste verjaardag*. Den Haag: Damen. 55–66.
- Van de Craen, Piet and Roland Willemyns. 1988. The standardization of Dutch in Flanders. *International Journal of the Sociology of Language* 73: 45–64.
- Van de Velde, Hans. 1996a. A trend study of a trendy change. In Jennifer Arnold, Renée Blake, Brad Davidson, Scott Schwenter and Julie Solomon (eds.) *Sociolinguistic variation: Data, theory and analysis (Selected papers from NWAV-23 at Stanford)*. Stanford: CSLI Publications. 501–514.
- Van de Velde, Hans. 1996b. *Variatie en verandering in het gesproken Standaard-Nederlands (1935–1993)*. PhD dissertation. Nijmegen: University of Nijmegen.
- Van de Velde, Hans, Marinel Gerritsen and Roeland van Hout. 1996. The devoicing of fricatives in standard Dutch: A real time study based on radio recordings. *Language Variation and Change* 8: 149–175.
- Van de Velde, Hans and Roeland van Hout. 1996. Radio broadcasts as a source for the study of language change. Paper presented at NWAV 25, October 1996, Las Vegas, Nevada.
- Van Haeringen, Coenraad B. 1924. Eenheid en nuance in beschaafd-Nederlandse uitspraak. *De Nieuwe Taalgids* 18: 65–85.
- Van Haeringen, Coenraad B. 1951. Standaard Nederlands. *De Nieuwe Taalgids* 44: 316–320.
- Van Hout, Roeland. 1989. *De structuur van taalvariatie. Een sociolinguïstisch onderzoek naar het stadsdialect van Nijmegen*. Dordrecht: Foris Publications.
- Van Hout, Roeland. 1995. Taalvariatiepatronen in een sociolinguïstisch netwerk. *Taal en Tongval* 47: 149–158.
- Van Istendael, Geert. 1993. *Het Belgisch labyrint. Wakker worden in een ander land*. Amsterdam: Uitgeverij De Arbeiderspers.
- Van Poecke, Luc and Hilde van den Bulck. 1991. Taal en Omroep. Een schets van de evolutie in het taalbeleid van de Vlaamse Openbare Omroep. In Ludo Beheydt (ed.) *Taal en Omroep. Voorzeten* 33. 's Gravenhage: Stichting Bibliographica Neerlandica. 83–107.
- Vandeputte, Omer, Paul Vincent and Theo Hermans. 1995. *Dutch: The language of twenty million Dutch and Flemish people*. Lauwe: Stichting Ons Erfdeel vzw.
- Vieregge, Wilhelm H. and Anton P.A. Broeders. 1993. Intra- and interspeaker variation of /r/ in Dutch. In *Proceedings of Eurospeech '93, 3rd European conference on speech communication and technology*. Berlin. 267–270.
- Voortman, Berber. 1994. *Regionale variatie in het taalgebruik van notabelen. Een sociolinguïstisch onderzoek in Middelburg, Roermond en Zutphen*. Amsterdam: IFOTT.
- Willemyns, Ronald. 1970. A.B.N. in Zuid-Nederland: een kwestie van taalpolitiek. *Ons Erfdeel* 14: 5–17.
- Willemyns, Roland. 1988. Belgium. In Ulrich Ammon, Norbert Dittmar and Klaus J. Mattheier (eds.) *Sociolinguistics: An international handbook of the science of language and society*. Walter de Gruyter: Berlin. 1254–1257.
- Wolfram, Walt. 1993. Identifying and interpreting variables. In Dennis R. Preston (ed.) *American dialect research*. Amsterdam: John Benjamins. 193–221.
- Woods, Nicola. 1997. The formation and development of New Zealand English: Interaction of gender-related variation and linguistic change. *Journal of Sociolinguistics* 1: 95–125.

- Yaeger-Dror, Malcah and Bernard Kemp. 1992. Lexical classes in Montreal French: The case of (ɛ:). *Language and Speech* 35: 251–293.
- Zwaardemaker, H. and L.P.H. Eijkman. 1928. *Leerboek der Phonetiek. Inzonderheid met betrekking tot het Standaard-Nederlands*. Haarlem: De erven F. Bohn.
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