The spreading of uvular [ʀ] in Flanders

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Abstract

In this paper the socio-geographical distribution of alveolar and uvular /r/ in Flanders is researched to provide support for the idea that uvular [ʀ] has become more wide-spread in Flanders in the course of the 20th century. Due to its contact history with French and its relationship with German dialects, the Flemish situation might provide more insight in the controversy around the spread of uvular [ʀ] in Western-Europe. Three data sources are used for this study: two existing traditional dialect survey and a new socio-geographic survey based on a sociolinguistic approach.

1. Introduction

Although /r/ is marked by large-scale variation in the languages of the world, (cf. Van de Velde & van Hout 2001), the alveolar trill [r] is the prototypical r-sound looking at the statistics provided by Maddieson (1984:83). Uvular [ʀ] is infrequent and its occurrence seems to require an extra or special explanation.

The rise of uvular [ʀ] in Western Europe has been debated among linguists since the end of the 19th century. Trautmann (1880) attributed the origin of uvular [ʀ] to the Parisian elite in the 2nd half of the 17th century and Chambers & Trudgill (1980:186ff) explain the presence of uvular [ʀ] in Danish, Dutch, German, Norwegian and Swedish by the prestige and influence of French. However, it took uvular [ʀ] centuries to become the common variant in France (Martinet 1985:38-39; Carton 1995:36; Tops 2009:238-246). And, the French connection has been contested as an explanation by a number of authors. Moulton (1952) and Penzl (1961) showed that varieties of German had uvular [ʀ] before (Parisian) French, and Wiese (2001) argued that the developments in German were independent from those in French.

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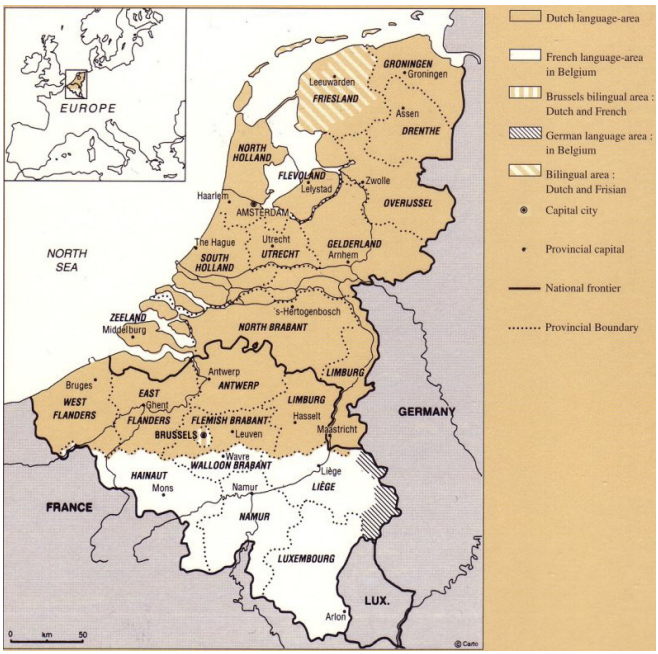
Many studies report the occurrence of uvular [ʀ] in Flanders, the Dutch speaking part of Belgium, especially dialectological studies (see Section 2). In some areas the presence of uvular variants is linked to French, in other areas it is considered to be a product of the dialect continuum with German. Due to its contact history with French and its relationship with German dialects, Flanders seems to be an ideal testing ground to get more insight in the controversy around the spread of uvular [ʀ] in Western-Europe. To provide support for the idea that there is a general rise of uvular [ʀ] in Flanders and to get more insight in the mechanisms underlying this change, the socio-geographical distribution of alveolar and uvular /r/ needs to be investigated more systematically.
The data we present come from three rich data sources, two more traditional dialect surveys (RND, GTRP) and one socio-geographic survey (RAS) based on a sociolinguistic approach. We will discuss the data and results in Sections 3 to 5. In Section 6 we will argue that we can put the results of the three data sources on a time scale, in order to make the rise and spread of uvular [ʀ] visible. It is not only observed at the borders of the language area, but there are also patterns of internal diffusion, as we will argue. We also need to discuss why uvular [ʀ] has the prestige it appears to have acquired, a question we will address in Section 7.

2. Flanders and uvular [ʀ]

In this contribution the Flemish provinces will be used to interpret the regional distribution of (r). From left to right (west to east) in Map 1 we find:

- West-Flanders: bordering the North Sea and France;
- East-Flanders: bordering the south-western part of the Netherlands and Wallonia;
- Antwerp: bordering the southern part of the Netherlands;
- Flemish-Brabant: bordering Wallonia and containing Brussels;
- Limburg: bordering the southern part of the Netherlands.

France and Wallonia are French speaking. Brussels is officially bilingual French-Dutch, French being the dominant language (Janssens 2008), but the local dialect is Brabant Dutch (De Vriendt & Willemyns 1987). Belgian French has mainly uvular variants (Demolin 2001). Alveolar variants occasionally show up in different regions but they are considered archaisms (Hambye 2005:208). Unfortunately, the quality of /r/ is not transcribed in the linguistic atlas of Wallonia (Remacle 1953:59).



Map 1 – Map of the Dutch language area, situated in the Netherlands and Belgium.

From: Vandeputte, Omer. 1983. *Dutch: the language of twenty million Dutch and Flemish people.* Rekkem: Stichting Ons Erfdeel. © Ons Erfdeel vzw. Reprinted with permission.

In dialectological studies uvular [ʀ] is systematically reported for the eastern part of Limburg. Grootaers (1951:40) states that all Flemish dialects have an alveolar realization except for the Limburg dialects. The same conclusion can be found in Weijnen (1991), who adds that the uvular [ʀ] is characteristic of the north-eastern part of Limburg. As for the provinces of Flemish Brabant and Antwerp, Brussels is marked as a uvular area (Mazereel 1931; Baetens-Beardsmore 1971; Weijnen 1991; De Vriendt 2004). Uvular [ʀ] is reported for Aarschot (Pauwels 1958) and Turnhout (Aerts 1955). More recently, De Schutter (1999:304) observes its occurrence in the city of Antwerp and claims that it is becoming the norm in the Antwerp urban dialect, which is the most prestigious dialect in Flanders (ib:303). However, in De Schutter & Nuyts (2005), uvular [ʀ] is not mentioned as a characteristic of the urban dialect. In East-Flanders, uvular [ʀ] is known as a stereotype of the Ghent urban dialect. De Gruyter (1907) observed the new variant in the beginning of the 20th century. Rogier (1994) documented

its spread in the surrounding suburbs and villages. In West-Flanders no special observations about the pronunciation of /r/ are made.
At the same time, in the 20th century, uvular [ʀ] has often been considered a speech deficit (De Schutter 1999:304; Verstraeten & Van de Velde 2001:46; Tops 2009:198). Consequently, a lot of children were sent for treatment to a speech therapist, although Blancquaert (1934:114) had argued in favor of tolerance towards uvular [ʀ]. At the Flemish broadcasting corporation speakers with uvular [ʀ] did not pass the microphone test (Van de Velde 1996:126) and especially schools for drama and eloquence banned uvular [ʀ]. The Belgian film maker and author De Kuyper (1993:37-39) describes how he was banned from a Flemish music academy due to his French /r/ (i.e., uvular [ʀ]). Nowadays, policy has changed and uvular [ʀ] (except for variants with strong friction, as occurring in the Ghent dialect) is accepted at the broadcasting corporation (Tops 2009:198). Since the 1960's text books for speech therapists have shown more tolerance toward uvular [ʀ], but even today alveolar [r] is still preferred "for technical reasons" (Timmermans 2004:33-34). Interestingly, Van Bezooijen (2003:83) suggests that some speakers are simply not able to produce an alveolar trill and use a uvular trill instead and she sees this genetic characteristic as one of the mechanisms involved in the spread of uvular [ʀ].

3. RND

The dialectologist Blancquaert started collecting data in 1922 for the first part of the *Reeks Nederlandse Dialectatlassen* (RND), inspired by Gilliéron's work for the Atlas Linguistique de la France (Hagen 1995:81). Later, RND developed into a series of dialect atlases covering the complete Dutch language area, with 1956 localities and 4012 informants. The volumes covering Flanders were published between 1925 and 1962 and the data was collected between 1922 and 1953 (Reker 1997:51). A standard questionnaire, mainly consisting of sentences to be translated in the local dialect, was used for data collection by experienced field workers who transcribed – on the spot – the sentences in (narrow) IPA (bear in mind that portable recording equipment was only introduced in the 1950's). The Flemish data used in this study were mainly collected by Blancquaert and collaborators trained by him. For our analysis, we will focus on the 859 localities that are currently situated in the Flemish Community and Brussels Capital Region (the linguistic border was fixed in Belgium in 1962).
Blancquaert first selected localities with at least 2000 inhabitants, smaller places were added in transition zones and if distances between places were larger than

5 km (Hagen 1995:81). Blancquaert did not opt for the traditional NORMs (non-mobile, older rural males; the common type of informant in dialect geography; cf. Chambers & Trudgill 1980:33). Instead, he had a preference for informants between 20 and 40 years (Blancquaert 1948:24), who grew up in the locality and had local parents. About half of the informants belonged to the middle class and almost one quarter were women. In most localities two to three dialect speakers served as informants. It is obvious that RND aimed at collecting the – at the moment of data collection – contemporary use of the dialect. For a more detailed discussion of the characteristics of the RND informants in comparison with other dialect atlases we refer to Johnston (1985).
The transcribers distinguished two variants of /r/: *r met tongpunttrillingen* (r with trills of the tongue tip, i.e. [r]) and *gebrouwde r* ('burred r', i.e. a uvular realization). Our analysis is based on lexical items from three sentences of the questionnaire: 36 (*peer* 'pear'), 85 (*rijkdom* 'wealth') and 86 (*dorst* 'thirst') of the questionnaire. We selected these items as they were not marked by variation in lexical form, which means that they kept the /r/ most of the times. Lexical variants and realizations in which (r) was deleted were coded as missing values. For each dialect an index score (percentage) was calculated between 0 (alveolar) and 100 (uvular).
In total, 859 Flemish dialects were incorporated. Map 2 gives an overview of the distribution of (r) in Flanders. 803 of them (93.5%) having alveolar [r], 56 (6.5%) having uvular [ʀ]. None of the places had variation in the transcription of place of articulation of (r), and the transcribers had only made remarks for two dialects (0.2%) on local variation in the pronunciation of /r/.

Map 2 – Geographical distribution of (r) in RND data in Flanders (859 localities, collected between 1922-1953). White dots: alveolar [r]; black squares uvular [ʀ].

The overall impression of Map 2 is that the uvular [ʀ] is more characteristic of the periphery of the Flanders area than of its core parts. No larger urban centers are involved, except for bilingual Brussels. Map 2 shows that uvular [ʀ]

is present up in the following areas (for a more detailed listing of the places, see Tops 2009:204-5):

- 35 places in the east of the Limburg province, including three places in the Voer-region;
- Five places in West-Flanders, one isolated, one near the coast and French-Flanders, four on the Dutch-French language border;
- Nine places in Brussels and immediate surroundings;
- In the rest of Flemish-Brabant: two places on the Dutch-French language border and five places in the east of the province.

4. GTRP

The Goeman-Taeldeman project aimed at collecting a phonological and morphological corpus of the Dutch dialects (Goeman & Taeldeman 1996). The coded transcriptions are available as the Goeman-Taeldeman-Van Reenen database (GTRP). In total, 613 dialects were recorded in the Dutch language area. 189 localities were selected in Flanders, which is much less dense than RND. Goeman (1999:58-70) presents an analysis of the social characteristics of the Dutch GTRP informants. Unfortunately, there is no detailed information published about the Flemish part of GTRP.

For each locality in Flanders there was one informant. All the Flemish data were collected between 1990 and 1993. Participants were not exclusively NORMs (Goeman & Taeldeman 1996:52-53). Urban dialects were also included in the sample, and whether a man or a woman was selected depended mainly on practical issues as availability and willingness to participate. Non-educated informants were only selected if they had enough metalinguistic awareness and insight in the aim of the questionnaire. Almost all participants were between 50 and 75 years old at the moment of recording. The main criterion was that participants were indigenous (i.e., grew up locally), preferably of indigenous parents and speaking the dialect on a regular basis (Goeman & Taeldeman 1996:53).

Almost all Flemish data were collected and transcribed by two field workers. The questionnaire contained 1867 items and was sent to the participants about a week in advance. The recordings took about half a day for each informant. For our analysis we selected the 161 singular nouns containing /r/. In the Flemish data the transcribers only made a distinction between alveolar, uvular and deleted

variants of /r/[1]. The deleted variants variants were not taken into consideration for the calculation of the index scores on the front-back dimension. Map 3 gives an overview of the distribution of /r/ in Flanders on the basis of the GTRP data.

Map 3 – Geographical distribution of (r) in GTRP data in Flanders (189 localities, collected between 1922-1953). White dots: homogeneous alveolar localities; black squares: homogeneous uvular localities; grey triangles: non-homogenous place of articulation.

Also in these dialect data places with alveolar [r] are dominant (167/189, 84.3%). Thirteen places only show uvular [ʀ] (6.9%), and nine places/informants (4.8%) mix [r] and [ʀ], but it should be noted that they almost exclusively use uvulars. Again, uvular [ʀ], like in RND, occurs in the peripheral area, with the exception of one important urban centre in the heart of East Flanders: Ghent. The occurrence of the uvular [ʀ] can be summarized as follows (for a listing of the places, see Tops 2009:206):

- 18 places in the east of Limburg, including one locality in the Voer-region;
- Two places on the Dutch-French language border;
- Two cities: Ghent (East Flanders) and Ypres (West Flanders);
- It is important to remark that Brussels and its surroundings was not included in the places selected in GTRP.

[1] In the Netherlands the phonetic transcriptions are much more detailed and includes variation in manner of articulation and voicing.

5. The Rapid Anonymous Survey (RAS)

Tops (2009) conducted a large-scale sociolinguistic survey in Flanders collecting data on the pronunciation of /r/ for 1,912 speakers distributed over 89 localities in Flanders. The aim of the study was to get insight in the socio-geographical distribution of /r/. The technique was inspired by Labov's famous department store study of /r/ in New York City (Labov 1966). The rapid anonymous survey technique is well known thanks to the incorporation of Labov's study in most introductory textbooks in linguistics and sociolinguistics. The technique is also widely popular among undergraduate students taking their first steps in the study of language variation and change. Surprisingly, this research method is hardly used in international publications, Horvath & Horvath's work on /l/ vocalization in New Zealand and Australian English being a rare and successful exception and adaptation (Horvath & Horvath 2001). An important adaptation to Labov's work is that a short word list (shorter than Horvath & Horvath's) was used and that the speech was recorded.

The selection of the localities was done in two steps. In the first step, 39 localities were selected equally distributed over the whole of Flanders, including the main Flemish urban centers Antwerp, Bruges, Ghent and Genk, towns with a regional function (as defined in the official spatial planning documents; cf. www.ruimtelijkeordening.be) and villages. In the second step of data collection, these localities were supplemented by 50 localities selected in areas where alveolar and uvular variants of (r) co-occur. These regions were the surroundings of Ghent, the east of Limburg (the boundary of the old uvular [ʀ] area) and an area north of Antwerp (Hoogstraten and surroundings).

People walking on the street or shopping were approached in the 89 localities by a field worker speaking standard Dutch with the request to participate in a study on voice quality of Brussels University (Vrije Universiteit Brussel) that would take less than 2 minutes of their time. This guise was used as a justification for the recording of the participant's speech and kept the purpose of the research hidden. If somebody agreed to participate, the interviewer asked their age and whether they were local (only local participants were selected for the analysis). They had to read 20 words, listed on four cards, offered in a random order. The aim was to fill a quota sample of four groups of five participants: two age groups (old vs. young) by gender. The age ranges were 16 to 35 (young) and older than 35 (old). When there were problems to fill the quota the locality in question was revisited. With only a few exceptions (even after returning twice to the same place), the quota could be filled fairly well. The total number of participants was 1,912.

The speech was recorded on a portable TASCAM DA-P1 recorder, with a Sehnheiser MD425 dynamic supercardioid hand-held microphone. The recordings did not only have the sound quality required for reliable auditory analysis, most of them were also good enough for acoustic analyses (cf. Tops 2009:21-120).

The word list to be read aloud contained 20 monosyllabic words, distributed on ve cards. Eight words were (r)-less distractors. All the cards ended with a distractor, to avoid end of lists eects aecting the realization of (r). Twelve words contained our variable (r): three in onset position (*reep, rood, reus*), three in coda position (*gaar, zuur, voer*), three in an onset cluster starting with [t] (*troon, trein, trui*) and three in a coda cluster ending with [t] (*buurt, kaart, woord*).

The number of usable (r) realizations collected was 22,720. Twelve variants – along the dimensions of trilling, friction, place of articulation, and voicing – were distinguished on the basis of a combination of auditory and spectral analyses by the second author. However, the methodology was developed in collaboration with a number of specialists in the fields of phonetics, dialectology and language variation and change. In cases of doubt, these specialists were also consulted for the coding of the variants. It resulted in six alveolar, four uvular variants, schwa and a null realization. Per locality the number of variants ranged between four and twelve. 74 localities (83.1%) had eight to eleven variants. This shows the enormous variability of the pronunciation of /r/ within localities. Some variants were particularly related to the position of (r) in the word, but we will not further investigate the role of the linguistic context in this contribution. Except for the front-back distinction of alveolar vs. uvular, there were no socio-geographic patterns in the distribution of the variants. Therefore, and for the sake of comparison with RND and GTRP data we will focus on the alveolar-uvular dichotomy in the remainder of this paper. We found 15,623 alveolar realizations (68.8%), 7,044 uvular realizations (31.0%), 11 schwas (0.0%), and 55 deletions (0.2%). We computed for each speaker a front-back index or percentage, excluding the schwa and the null realization. A score of 0 means only alveolar variants, a score of 100 means only uvular realizations. The next step was to compute the average percentages per locality. The distribution of the scores for all localities can be found in Figure 1.

How is the distinction of alveolar and uvular variants distributed over speakers and localities? There is a lot of variation between speakers, ranging from completely alveolar to completely uvular, but there is a remarkable absence of variation within speakers. Individual speakers turn out not to mix uvular and alveolar variants in our recordings. The number of speakers who mix both variant types is 102 (5.3%), of whom only 38 (2.0%) have a mix of 20% or more of one variant and 80% or less of the other one.

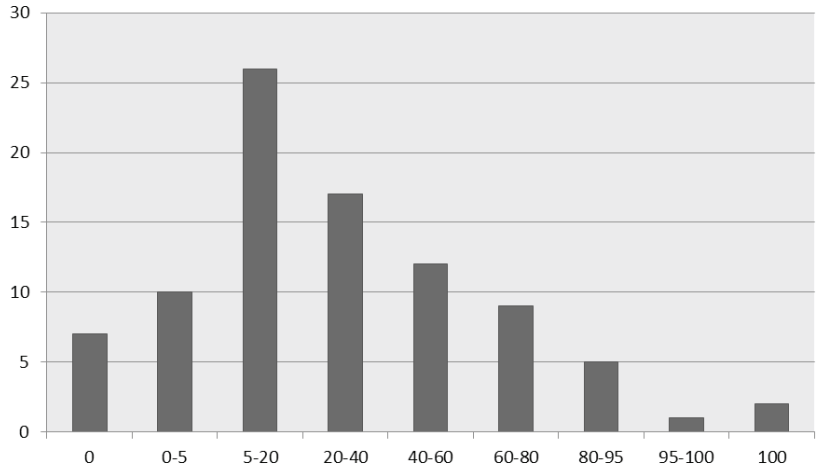


Figure 1 – The frequency distribution of the average front/back scores for the 89 localities.

Figure 1 shows that most localities have more alveolar realizations, as is also clear from the mean percentage of 31.1%. Most localities have a mixture of front and back variants. Only seven places have exclusively alveolar [r], and only two uvular realizations, which implies that uvular [ʀ] is present in almost all localities. When localities have a score somewhere between 0 and 100, these localities have a mix of uvular and alveolar speakers, as the number of mixed speakers is low (5.3%). In most mixed places alveolar realizations are dominant (60 scores below 50 and above 0) and only eight places have a score of 80% or more on the front-back dimension. The standard deviation of 45.5 reflects a high degree of variability between the localities.

When a change is ongoing from alveolar to uvular in Flanders, the localities will show an increase in the uvular index when younger and older speakers are compared. Figure 2 presents the comparison between the two age groups per locality. The indices of the younger group of participants are represented on the vertical axis and the indices of older group of participants on the horizontal axis. The diagonal indicates the position of the indices if the two groups would have the same scores. A stable age distribution – indicating absence of change in progress – would produce scores oscillating randomly near the diagonal.

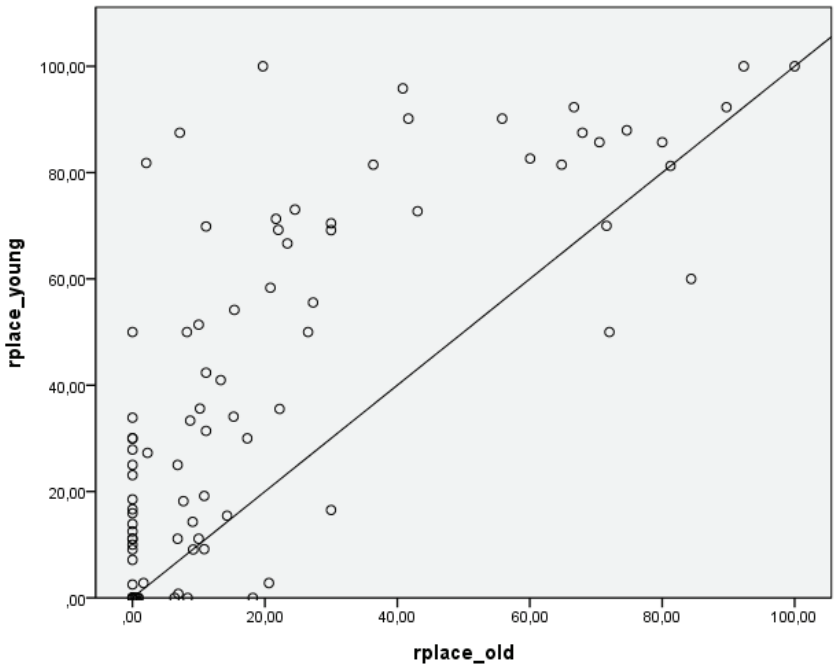
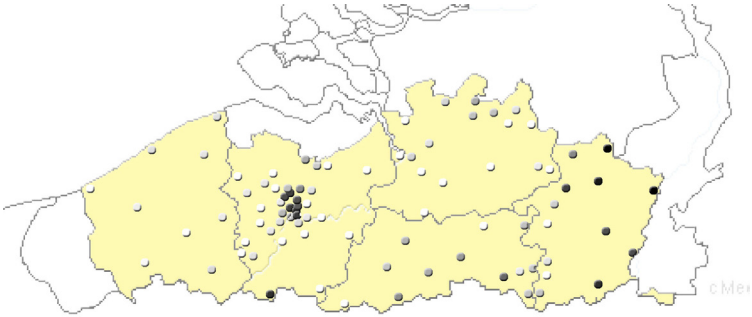


Figure 2 – Scattergram of the mean front-back index (percentages of uvular [ʀ]) of the younger group versus the older group for 88 localities (the young age group was lacking in one of the localities).

The pattern in the scattergram of Figure 2 is remarkably clear. All dots – with only a few exceptions – are in the upper part. Younger speakers have more uvular realizations than older speakers. This sharp shift towards uvular realizations is found in all provinces (Brabant, Antwerp, Limburg, East-Flanders), except West-Flanders where all localities had low scores (about or less than 20%), both for the younger and older age groups, indicating that this region has mainly alveolar realizations. Some localities have a strong shift, from a percentage of (about) 0% for the older age groups to more than 80% for the younger age group. The few scores in the area under the diagonal lower part might be the result of sampling fluctuation.

The geographical age shift can be illustrated with two maps: Map 4 gives the geographical distribution for the old speakers, Map 5 for the young ones. The darker the symbol, the higher the percentage of uvular [ʀ] use in a locality.



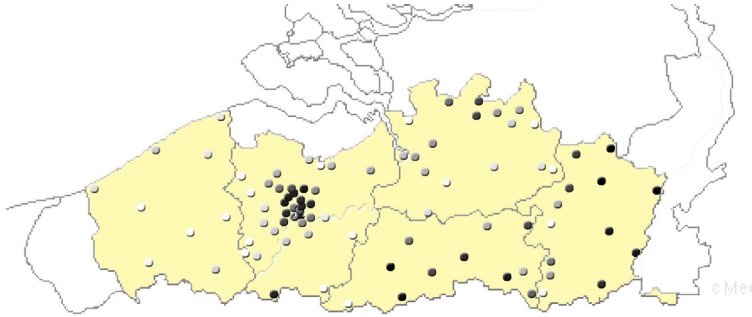
Map 4 – Geographical distribution of the front-back index for the older age groups in RAS, ranging in gray between white symbols (0%, only alveolar realizations) and black symbols (100%, only uvular realizations).

Map 4 shows the use of uvular [ʀ] by older speakers. Uvulars are frequently used in:

- The east of the province of Limburg;
- Ghent and surroundings.

Additionally, uvular [ʀ] also shows up in:

- A number of places on the Dutch-French language border;
- Almost all over the province of Flemish-Brabant;
- In the north of the province of Antwerp.



Map 5 – Geographical distribution of the front-back index for the younger age groups in RAS, ranging in gray between white symbols (0%, only alveolar realizations) and black symbols (100%, only uvular realizations).

Map 5 for the younger age groups shows a strong geographical expansion of the uvular realizations in comparison with the older age groups in Map 4.

- There is an increase of the use of uvulars in Limburg: quantitatively in the old uvular places, geographically towards the west to places in Limburg that were originally outside the uvular area;
- The Ghent area has become larger, indicating geographical diffusion from the city of Ghent;
- The localities in Brabant show strong increase in the use of uvular realizations, all over the province;
- The localities north of Antwerp show an increase in the use of uvular [ʀ].

6. Mapping the rise of uvular (ʀ) in Flanders: Integrating the three data sources

In the preceding sections, three different data sources on the realization of /r/ were discussed. At first sight, the geographical patterns seem to fit nevertheless. No obvious contradictions show up in the geographical patterns observed, as the same areas consistently come out as centers of gravity and perhaps expansion of uvular [ʀ]. Can we push the analysis one step further by reconstructing a time scale on the basis of our data sets that gives a more detailed and precise impression of the rise of uvular [ʀ] in Flanders? That raises of course the question of the comparability of our data sources. Therefore we look at the similarities and differences between RND, GTRP and RAS.

In Table 1 we have defined six pivotal characteristics that are used to evaluate our three data sources. The first characteristic is defined as dialect as target. RND and GTRP obviously have the local dialect as the target variety: the participants were asked to translate sentences and words in their local dialect and were selected for this purpose. In RAS the target variety was not made explicit to the participants and they did not know the real purpose of the study, as the guise of a voice quality study was used. However, the whole context of the study aimed at eliciting non-dialect / standard speech: the informants were addressed in standard Dutch by a researcher who identified as being from the university and were asked to read aloud a word list with (standard) Dutch words. Reading out loud single words is a regular activity in primary school. The visible use of recording equipment increased speech monitoring and the use of standard speech. None of the informants translated the words spontaneously in their local dialect, as was clear from the quality of their vowels. Therefore RAS is characterized as minus for dialect as target.

	RND	GRTP	RAS
Dialect as target	+	+	–
Local variation	–	–	+
Isolated words	–	+	+
Metalinguistic awareness	+	+	–
Experts	+	+	–
Year of birth	± 1910	± 1930	Old: ± 1950 Young: ± 1980

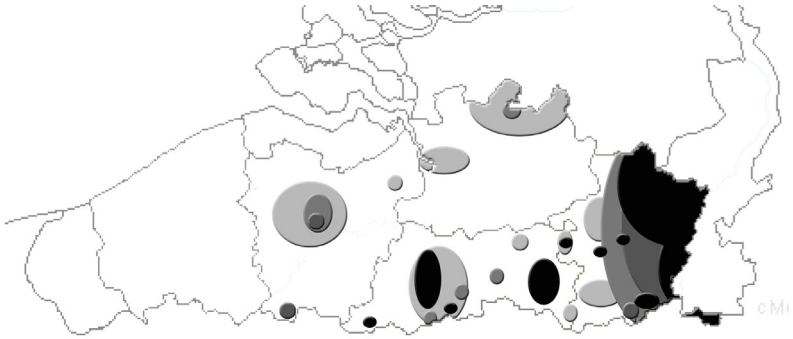
Table 1 – Characteristics of the three data sources.

The RAS study aimed at charting local variation by sampling individual speakers, not being selected because of their expertise as in GTRP and RND. GTRP selected only one speaker per locality, who was presumed to be an expert in the local dialect. Although being older, RND is more sociolinguistic in its approach (Hagen 1995). The field workers commonly worked with two or three informants per locality and asked questions about the local sociolinguistic situation (e.g., do people also speak standard Dutch or French, differences within the dialect, immigrants from other areas). We found a couple of remarks about the pronunciation of /r/ in the Flemish localities, but this did not lead to variation in the transcriptions of /r/ within localities. Therefore, RND is also marked as minus for local variation. Variation between speakers within localities is at the heart of the RAS data collection, aiming at 20 informants per locality. RAS used isolated words as triggers for eliciting data, GTRP isolated words and short phrases, RND sentences.

The RAS survey pretended to be a study on voice quality, not of dialect or standard pronunciation. That means that the informants focus less on their own speech and language than in RND and GTRP, which openly direct the awareness of the informants on the distinction between standard and dialect. Furthermore RND and GTRP selected expert speakers of the local dialect, while RAS selected speakers that were just local, without any evaluation of their speech characteristics.

Despite these differences, there is one striking correspondence in the outcomes of the three surveys. There is hardly any variation on the front-back dimension of /r/ on the individual level. For RAS – based on twelve tokens of (r) – we found a percentage of 5.3% mixed speakers. For GTRP – 161 (r) tokens – variation was found in only two localities (1.1%); no variation was found in the other 187 localities, despite the large number of words per locality. However, it must be mentioned that this low number of localities showing variation for place of articulation can be partly a result of the transcription method used in Flanders (Rob Belemans, p.c.). None of the 189 places in RND showed

variation for the three words investigated, and only for two places a remark was made about the pronunciation of /r/.
How can we put the three surveys on a time scale? We can globally estimate the average year of birth of the informants in the three surveys. For RND the age range of 20 to 40 years of age is reported as the default, which gives an average of 30 years of age. The time range of data collection in Flanders was between 1922 and 1953, the majority of the data being gathered in the 1920's and 1930's. That results in 1930 as a rough estimate of the year of birth of RND participants (1940 – 30 years). GTRP was recorded between 1990 and 1993, with an average age of 60.5 years. That gives an estimate of 1930 as year of birth. The RAS data were collected between 2002-2004, the average age of the participants in the young age group is 24 and of the old group 54. That gives an estimated average year of birth for the younger group of 1980 and for the older group of 1950. These outcomes were included in Table 1.



Map 6 – The spreading of uvular [ʀ] in Flanders between 1930 and 2000. Black: areas RND (1930); dark grey: areas GTRP (1950); grey: areas RAS old (1970); light grey: areas RAS young (2000).

Estimating a time slot for each of the data sources we added 20 years to the estimated average year of birth, to indicate that the group involved had reached the adult life stage. This results in the following periods: 1930 (RND), 1950 (GTRP), 1970 (RAS old) and 2000 (RAS young). Map 6 visualizes the geographical expansion of the use of uvular [ʀ] in Flanders. In stead of outcomes on individual localities as in Maps 2 to 5, we have indicated areas where uvular [ʀ] shows up. The uvular [ʀ] areas in the oldest data (RND 1930) are marked in black. For the other sources/periods we used shades of gray, ranging from dark grey (1950) to light grey (2000).

The following geographical patterns show up:

- East-Limburg: The border of this old uvular [ʀ] area moves gradually westwards;
- Brussel: Gradual expansion to its surroundings;
- Ghent: Gradual expansion from the city center to the surrounding area;
- North of Antwerp: a new and expanding zone;
- West-Flanders: uvular [ʀ] is almost completely absent;
- [ʀ] islands – arising in different periods – pop up in different areas. Some of them are close to the linguistic border with French. It is unclear from Map 6 whether the presence of uvular [ʀ] places in the East of Flemish-Brabant are linked to the expansion in Limburg and Brussels.

7. Conclusion and discussion

Our three data sources provided substantial and complementary information on the occurrence and rise of uvular [ʀ] in Flanders. The dialect data sources of RND and GTRP exemplified that uvular [ʀ] already had acquired a (modest) position in the dialects of Flanders in the first half of the 20th century. This was confirmed by observations in the dialectological literature on specific dialects. The socio-geographical RAS data made clear that the use of uvular [ʀ] sharply increased, as witnessed in particular by the data collected on the younger age groups. Whereas uvular [ʀ] was particularly found in the periphery of the language area covered by the corpus (East-Limburg and occasionally near the language border with French) in the RND and GTRP data, it is present in all provinces of Flanders nowadays, with the exception of West Flanders, where uvular [ʀ] only occasionally shows up. It is interesting to note that in the literature Bruges, the largest urban area in West-Flanders, has been mentioned several times as a place where uvular [ʀ] was observed (Weijnen 1991:190). Bruges was part of the RAS database, and the mixed picture of Bruges is confirmed by the data. There were 18 homogeneous alveolar speakers, but two outspoken uvular speakers as well (one old, the other one being young). According to our RAS data Bruges seems not to be an expansion center of uvular [ʀ], but its presence and status certainly needs to be investigated in more detail.

The three databases together, as explained in Section 6, reveal the patterns of an ongoing change from alveolar [r] towards uvular [ʀ], triggering automatically the question about the origins of this change. Several origins or sources seem to be present. The most straightforward explanation can be given for uvular [ʀ] in

Limburg, as it is part of a larger and older Germanic dialect continuum marked by the uvular [ʀ]. Van Reenen (1994) concludes on the basis of the GTRP data from the Netherlands, that Dutch Limburg is the core area of uvular [ʀ], but he also observed the occurrence of uvular [ʀ] in the Dutch province of North Brabant, with Breda as the center of expansion. Mees & Collins (1982) observed that uvular [ʀ] is common in educated speech in large parts of the Netherlands, including Limburg and North-Brabant.

The Dutch North-Brabant area borders the Antwerp province and might be the trigger for the emergence of uvular [ʀ] in the north of the province of Antwerp. Since the 1980's this area (and also the Belgian East-Limburg area near the Dutch border) has seen a large influx of immigrants from the Netherlands, showing an increasing trend in the last two decades (Sumresearch 2006; WODC 2009). In the beginning, a lot of Dutch immigrants were retired, wealthy people, motivated by economic reasons (cheaper housing, tax regulations). Since the 1990's a broader section of the Dutch population emigrates to Flanders, often for economic reasons. It should be noted that a substantial part of them remain closely attached to the Netherlands, by for instance a job in the Netherlands (WODC 2009:23). The number of Dutch immigrants per 10000 inhabitants ranged between 50 and 80 per 10000 inhabitants in the period 1997-2003 in the area bordering the Netherlands (Sumresearch 2006:16). Specifically for the region North of Antwerp a yearly increase of about 980 inhabitants coming from the Netherlands is observed, while at the same time about 600 inhabitants leave the area for other Belgian places (Sumresearch 2006:17). It is not unlikely that the increasing presence of people from the Netherlands, of whom many come from a uvular [ʀ] area and stay connected to it (e.g., by working in the Netherlands; WODC 2009:23), are a factor in the spread of uvular [ʀ] in the region north of Antwerp. Of course, the prestige of Antwerp dialect, and the increasing use of [ʀ] in Antwerp in recent years (De Schutter 1999), will also add to the increased use of uvular [ʀ] north of Antwerp.

The occurrence of the uvular [ʀ] along the German-Romance language border can be brought about by the impact of varieties of French having uvular [ʀ]. Kruijsen (1995) established stronger tendencies of borrowing from French along the language border in the province of Limburg. This effect was stronger the closer a place was to the language border. He admittedly investigated lexical borrowing, whereas the /r/ pronunciation is in fact a structural borrowing. Kruijsen (1995) found however some more general patterns of borrowing that do not exclude the borrowing of uvular [ʀ]. The mechanism of borrowing can help to explain why places shift in reporting a uvular [ʀ] in comparing the three data sources. The uvular [ʀ] may arise because of bilingual speakers and language

contact, but may disappear by counter-effects as well. An intensive language contact situation, active bilingualism, in combination with the dominance of the French language offers a plausible platform for the occurrence of uvular [ʀ] in Brussels and its surroundings. Patterns of diffusion may have played and still may play a role in propagating the uvular [ʀ] in the municipalities of Brussels.

The Ghent uvular [ʀ] is a famous case in the Dutch dialectological literature, as is the earlier mentioned city of The Hague in the Netherlands. The origin and prestige of the uvular [ʀ] is found in French, the language learned and used by the local bourgeoisie who started to use this form in their dialect and standard Dutch. The RAS data testify how strong nowadays the uvular [ʀ] is expanding around Ghent (see also Rogier 1994). The uvular [ʀ] apparently acquired prestige in Ghent and its surroundings.

The situation in the Flemish Brabant places is much less transparent. Perhaps Brussels had an impact, perhaps it was the same mechanism, only later, as in Ghent and The Hague, perhaps a combination of both. It may have its origin in an urban hierarchy in which Brussels has prestige. The hierarchy matches with the direction and patterns of diffusion in Flemish-Brabant.

The literature often reports how rapid the spreading of the uvular [ʀ] must have taken place in France and Germany. The RAS data confirm in the age patterns found (see Figure 2) that the change can be fairly rapid and may possess more the contours of a sharp shift than being marked by a gradual curve. It means the geographical and a social embedding can develop or construct pathways along which language change can proceed with a strong and intensive impetus. In such rapid and vigorous changes it is likely that children play an important role, just as in the spreading of approximant /r/ in the Netherlands (Van Bezooijen 2005). The /r/ sound being one of the latest to be acquired, it seems to be sensitive to phonetic adaptation in childhood (Van Bezooijen 2005:29) and children might take over uvular [ʀ] from other children, not from their parents. Also the fact that (some of the) uvular variants are easily distinguishable from alveolar variants, might be a factor in the speed of this change. When uvular [ʀ] develops overt positive prestige, it may rise radically in speech communities at the expense of the alveolar variants. It explains at the same the rigor with which uvular [ʀ] was contested, as mentioned often in the literature.

The ease of perception relates to the question of the linguistic embedding of the alveolar and uvular variants. As to the linguistic embedding of the uvular [ʀ] our data give some relevant outcomes. The number of mixed speakers is remarkably low. There is no mention of mixing by individual speakers in the RND data, but according to the remarks in the atlas one of the three informants in Bree (Limburg) is an alveolar [r] speaker, uvular [ʀ] being the 'dominant'

variant and in Strombeek-Bever (near Brussels) one informant – a primary school teacher – speaks with [r], while [ʀ] is 'common'. The GTRP data contain two speakers with mixed realization. The most obvious explanation, given the strong regional concentration and the remarks in the notes of RND, seems to be the impact of the alveolar standard norm. The RAS data contained 102 mixed speakers (5.3%). They occurred in all kinds of localities and we could not trace a further explanatory pattern in their occurrence. We would have expected more mixed speakers in mixed localities, but we did not find such distribution. On the other hand, the variability within places was large, which sometimes was the consequence of the differences between the two age groups investigated.

In the embedding of the change form alveolar to uvular we found no co-variation patterns with other variants having a strengthening or mediating effect in the transition from alveolar to uvular variants, for instance by using a trilled uvular [ʀ] first, followed by the occurrence of fricative variants, or by using uvular variant first in onset or coda. No traces of specific tracks or routes came about. This may explain the absence of mixing speakers. This suggests that it is worthwhile to perform a more detailed study on mixed speakers. At any rate, the high variability between speakers and the ease of perception of the alveolar – uvular distinction make the /r/ a perfect candidate to get involved in social patterning. However, it should be noted that not all uvulars are easy to distinguish from alveolars, and that this might also play a role in this change in progress.

The RAS data showed that there are hardly any homogeneous communities with respect to /r/. That means that /r/ is inherently marked by variation, that uvular [ʀ] is almost everywhere and that these variations may start to coincide to reach the stage of an incipient change. External forces or factors (borrowing from French, neighboring dialects, migration from the Netherlands) may contribute to strengthen patterns of co-incidence, resulting in a rapid and massive spread of uvular [ʀ] over Flanders. Some of our explanations are very tentative, and to fully understand the rise of uvular [ʀ] more research is needed to understand the role of and interaction between the factors suggested in this paper.

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