Patterns of /r/ variation

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1. INTRODUCTION

The title of this book, 'r-atics, refers to the chameleonic nature of the rhotics, whereas it is far from evident why there are so many different variants of /r/ – even within one language – and why /r/ is involved in so many patterns of variation and change. Furthermore, it refers to the fact that a lot of erroneous views on the characteristics and distribution of different variants of /r/ are spread among both lay-men and linguists. Ladefoged & Maddieson (1996: 245) state about the phonetic diversity of the class of rhotic sounds that "the overall unity of the group seems to rest mostly on historical connections between these subgroups, and on the choice of the letter 'r' to represent them all". The /r/ appears to cover an impressive range of sounds between trills, taps, fricatives and vocalic realisations, ranging in place of articulation from labial to uvular. Moreover, one of the variants is the non-realisation of /r/, a variant that became famous in sociolinguistics since Labov's study in New York City (Labov 1966). Wiese (this volume) presents in the introduction of his paper an overview of the variability of the r-sounds.

Several European languages show large-scale variation in the pronunciation of /r/: Dutch, French, German, the Scandinavian languages, but also English. Trudgill (1974) gives a map which shows the wide spreading of the uvular [R] over Western Europe, in contrast to the alveolar trill (see Map 3 in Torp, this volume). How normal is such a situation of strong competition between a front and a back variant of /r/? The voiced alveolar trill [r] is the prototypical r-sound as is clear from the statistics provided by Maddieson (1984:83). Uvular [R] turns out to be rare in the languages of the world. Wiese (this volume) points out that Göschel (1971) sees the uvular [R] as a Sprachbund phenomenon of Western Europe. The most popular view is that the uvular [R] has its origin in the French aristocracy of the 17th century (see Wiese, Demolin, and Torp, this volume; see also Chambers & Trudgill (1980) who propagated this view). Its large-scale diffusion was possible because of the high status of French in the upper classes of Europe. Wiese (this volume) suggests that the development towards a uvular r-sound was indigenous in the German speaking part of Western Europe. This view is confirmed by Dutch dialect data (Van Reenen 1994). Denton (this volume) adduces historical evidence on language change for a varied articulation of /r/ in the early Germanic languages, both within and across dialects.

The large /r/ variation induced us to organise a workshop on the sociolinguistic, phonetic and phonological aspects of /r/, within the languages of Western Europe. This workshop took place in Nijmegen (The Netherlands) from 25 to 27 May 2000, financed by the Dutch national science foundation (NWO), and hosted by the Max Planck Institute for Psycholinguistics. Its primary aim was to get a wider view on the patterns of variation and change of /r/, and to bring together research and researchers with different backgrounds in linguistics (phonology, phonetics, sociolinguistics, dialectology and historical linguistics). All contributions to this book were presented as discussion papers at the workshop. The only exception is the paper by Sankoff, Blondeau & Charity on /r/ in Montreal French, which was presented at NWAV29 (Michigan State University, 5-8 October 2000).

We continue with a brief overview of the 12 papers in this volume. We conclude by discussing in a nutshell some aspects of the embedding of /r/ variation in its linguistic and social context. We hope that this volume will be the starting point of an international and multidisciplinary network of linguists studying the characteristics of the rhotics in the languages of the world.

2. OVERVIEW OF THE PAPERS

The first five contributions concern specific language areas: German (Wiese), English (Foulkes & Docherty), Dutch (Verstraeten & Van de Velde), French (Demolin), and the Scandinavian language area (Torp). The four following papers deal with dialectal variation or with variation within specific (urban) areas. Goeman & Van de Velde present data on Dutch dialects spoken in the Netherlands. Van Oostendorp analyses data from the urban dialect of Tilburg and the dialect of Maasbracht, both situated in the south of the Netherlands. Llamas presents sociolinguistic data from Middlesbrough, an urban vernacular in the north-east of England. Sankoff, Blondeau & Charity analyse longitudinal sociolinguistic data from Montreal in Canada. The papers by Denton and Docherty & Foulkes use instrumental analyses of /r/, an approach which is also taken by Demolin. Denton does so in the perspective of the interpretation of historical data of Germanic languages. Docherty & Foulkes focus on the acoustic properties of the labiodental approximant that occurs in England as a rhotic variant. Van den Heuvel & Cucchiarini, the last contribution in this volume, takes a technological approach by using a speech recogniser for measuring the absence or presence of the /r/ in coda position in Dutch.

2.1. Richard Wiese: German

Wiese explores in his paper the nature and variation of r-sounds, especially within present-day German. It is claimed that the unity of /r/ in general is found in its phonotactic behaviour. Next, he studies the range and type of variation of /r/ sounds in different varieties of German and other Germanic languages, with a twofold aim. First, the nearly unlimited variation in terms of segmental features is re-affirmed. Languages may often display almost all of the /r/ sounds commonly mentioned. Transition from one type of /r/ into another is frequent, not uni-directional, and irrelevant to the linguistic system. Second, the pattern of /r/ in these languages shows that the phonotactics is undisturbed by the segmental variations. Finally, the sociolinguistic relevance of /r/ variation is discussed: the fact that variation is readily available for /r/ makes it possible to use this class of sounds in marking registers, dialects and other identity-related language varieties.

2.2. Paul Foulkes & Gerry Docherty: British English

Foulkes & Docherty discuss patterns of variation and change in British English. The /r/ is usually realised as an alveolar approximant, but several other variants are found which are restricted to particular phonological positions, regional dialects and/or certain speech styles. These include [ɾ], [ʀ] and [r]. In this study they focus on the labiodental approximant [ʋ], which until recently has usually been dismissed as a feature of defective speech, infantilism or affectation. Evidence from recent phonetic and dialectological work suggests, though, that the spread and perception of [ʋ]-like forms is changing and that it is recognised as a variant of British English /r/. Foulkes & Docherty document the history of [ʋ] in the context of other ongoing changes affecting the phonetics and phonology of British English. Data from their own recent study on /r/ in the urban vernaculars of Derby and Newcastle upon Tyne are presented. A remarkable outcome of the sociolinguistic component of their study is that working class speakers are leading the use of the labial approximant.

2.3. Bart Verstraeten & Hans Van de Velde: Dutch

Verstraeten & Van de Velde point out that almost all variants of /r/ found in the languages of the world, are observed in the Dutch language area, even in the standard language. They report on the results of a reading experiment with Dutch language teachers in the Netherlands and Flanders. Inter- and intraspeaker variation turn out to be high which indicates that many speakers do no have a clearly defined target standard realisation. As expected, more variation shows up in the Netherlands than in Flanders. However, the speaker variation is mainly

limited to manner of articulation. There is only a very small number of speakers showing variation in the place of articulation of /r/, i.e. having both front and back realisations.

2.4. Didier Demolin: Belgian French

Demolin's paper focuses on the phonetic and phonological properties of /R/ in Belgian French. The perspective adopted is that the (phonological) class of r-sounds is linked to the phonetic level in a complex way. Demolin presents a short historical overview on the characteristics of /R/ in French. Next, he presents the first results of a reading experiment focussing on the acoustic and articulatory properties of /R/ in Belgian French. Therefore, with the acoustic recordings simultaneous measurements of intra-oral pressure and airflow were made. He observes that phonetic variation is extremely high and states that the variants of /r/ need to be described in much more detail to provide us with an explanation for the patterns of variation and change of /r/. Moreover, perceptual factors must be integrated in the analysis of /r/. He makes the claim that the change form [r] to [R] is triggered by perceptual factors.

2.5. Arne Torp: Scandinavian

The contribution of Torp is a classical dialectological study which provides us with an overview of the /r/ variants found in the different Nordic (North Germanic) languages, i.e. the Scandinavian languages (Danish, Norwegian and Swedish) and the Insular Nordic languages (Faroese and Icelandic). Outside Denmark /r/ is almost everywhere a clearly consonantal phoneme, normally an apical (or coronal) vibrant or tap. In Danish there is widespread vocalisation of /r/ in rhyme position, like in most varieties of Continental Germanic (German and Dutch) and British English. Next, he gives an overview of the distribution of retroflex consonants and the dorsal /r/ in the area where Scandinavian languages are spoken (i.e. Denmark, Norway, Sweden and parts of Finland) both historically and presently. He explains their distribution by the hypothesis that dorsal /r/ and retroflex consonants do not occur within one and the same dialect, a co-occurrence constraint that needs to be modified because of the special role of r-vocalisation.

2.6. Ton Goeman & Hans Van de Velde: Dutch dialects

Goeman & Van de Velde's paper is a study of the geographical distribution of variants of /r/ and /ɣ/ in Dutch dialects. The study is limited to the dialects spoken in the Netherlands. They focus on the co-occurrence constraints on different variants of /r/ and /ɣ/ and test Walsh Dickey's (1997) hypothesis that a uvular trill and a uvular fricative or approximant cannot co-occur in the phoneme inventory of a language. She suggests "that this lack of contrast is a result of the

probability of the failure of the articulation of the uvular trill. Since a uvular trill target is often produced as a uvular fricative, it would be risky to base a phonemic contrast on such a distinction" (Walsh Dickey 1997:74). Dutch dialects are an excellent candidate for testing this claim as uvular realisations of both /r/ and /ɣ/ are widely spread in the Netherlands. Goeman & Van de Velde conclude that uvular realizations of /ɣ/ seldom co-occurs with uvular realizations of /r/ which means that there are a few counterexamples.

2.7. Marc van Oostendorp: Brabant and Limburg Dutch dialects

Van Oostendorp analyses data from two Dutch dialects to give an answer to the question what the phonological implications of the phonetic variability of /r/ are. He wants to show that /r/ is not a fixed point on the sonority scale – as Wiese argues – but that its chameleonic behaviour is related to consonantality. He points to a number of facts which support the following generalisation: the more consonant-like the position in which /r/ occurs, the less likely it is to pattern with the sonorants. The relevant facts are from Brabant Dutch (Tilburg) and Limburg Dutch (Maasbracht) - dialects spoken in the southern part of the Netherlands. In these dialects, /r/ behaves as a fricative or as a sonorant consonant, the fricative realisation occurring word-finally. Van Oostendorp argues that the reason for this phonological chameleonic behaviour of /r/ is a universal constraint FINALC, requiring words to end in a consonant; and that /r/ is particularly sensitive to this constraint because /r/ is not predetermined for place.

2.8. Carmen Llamas: Middlesbrough English

The paper of Llamas outlines findings from an on-going study of Middlesbrough English, presenting the sociolinguistic profiling of /r/. Gender differences are demonstrated in the distribution of variants, and two processes of linguistic change are illustrated in the variation revealed over apparent time. The emergence of a current innovation, that of [ʋ], in Middlesbrough is presented in the data. The paper seeks to identify those speakers in the sample responsible for the adoption of the new variant, and also to speculate on the motivation for its introduction. As the spread of [ʋ] is concurrent with several other widespread changes in British English, a comparative analysis is offered of the emergence of another feature, that of (th) fronting. The motivation for speakers' adoption of the innovations is considered in light of more individual profiles of the speakers responsible for their use.

2.9. Gillian Sankoff, Hélène Blondeau & Ann Charity: Montreal French

Sankoff, Blondeau & Charity investigate the relationship between language change in the community and change and stability of individual linguistic systems over their lifetimes. They examine the transition between apical and

posterior realizations of /r/ in Montreal French, a well-documented phonological change that took place over several decades since 1950. The apical or tongue tip variant can be either flapped or trilled. The posterior variant includes both a uvular trill and a velar fricative. Sankoff et al. study language change in progress by analysing real time data collected in Montreal in 1971, 1984 and 1995. For this paper longitudinal data from 25 adult speakers are analysed. Speaker age appears to be the most important factor underlying speaker variability in the adoption of the innovative, posterior [R]. For speakers between 25 and 45, however, social class is a powerful factor: middle class people change dramatically towards posterior realizations. The study also shows that speakers can change their pronunciation patterns far beyond the critical period.

2.10. Jeannette Marshall Denton: Early West Germanic

In Denton's paper, six of the most well-documented early rhotic-conditioned sound changes are examined, all but one of which occurred in West Germanic. The changes in this particular group all involved a lowering and/or retraction of a preceding vowel in the presence of an immediately following /r/. Working with Howell's (1991) hypothesis that the common feature shared by these conditioning factors was an approximant or vowel-like articulation rather than a strongly constricted one, Denton reviews the co-articulatory effects that approximant and other types of /r/ have on neighbouring sounds.

Unlike traditional descriptions of Germanic /r/ which state that the early Germanic rhotic was either coronal or uvular, Denton's paper demonstrates the likelihood that there was no single articulation of /r/ in the early Germanic languages, but that its articulation varied between more and less constricted varieties, both within and across dialects.

2.11. Gerry Docherty & Paul Foulkes: instrumental perspectives

Docherty & Foulkes investigate the variability in /r/ production from an instrumental perspective. They provide an overview of the acoustic and articulatory properties of /r/, with particular reference to anterior approximant variants. Second, they exemplify some of these properties by describing an acoustic study of variation in /r/ production by speakers of British English from Newcastle and Derby, drawing attention in particular to the labiodental approximant [ʋ], a variant of /r/ which is gaining currency in these and other varieties of English but which is not typically included within the class of rhotic sounds. This paper should be read in conjunction with that by Foulkes & Docherty.

2.12. Henk Van den Heuvel & Catia Cucchiarini: r-deletion in Dutch

Van den Heuvel & Cucchiarini study r-deletion in postvocalic, preconsonantal position in Dutch spontaneous speech. They investigate three properties of the left vowel context: vowel type (schwa, full vowel), vowel length (long, short) and lexical stress (+/-). Instances with possible realisations of (r) were extracted from a large speech database containing man-machine dialogues in an automatic train timetable inquiry system. The frequency of r-deletions in these 450 cases was investigated on the basis of variant selection by a CSR (Continuous Speech Recogniser) and human transcriptions of the same material. Deletion of (r) was significantly more frequent after schwa than after full vowels; the effects of vowel length and lexical stress were not significant. This appeared from both the CSR data and the human transcriptions. Discrepancies between the two sets of results were observed, too, which is interesting from a sociolinguistic point of view as well.

3. THE EMBEDDING OF /r/ VARIATION

Which elements or factors play a role in the existence and origins of /r/ variation? It cannot be our ambition to answer that question here. What we can try to do is to classify some significant issues in the manifold relationships of /r/ and the context in which this sound occurs. Five parts can be distinguished: the segment, coarticulation, the syllable, co-occurrence, and social embedding.

3.1. Segment

Wiese takes a clear but extreme point of view in the segmental features the variants of /r/ may take. The occurrence of a variant is only constrained by its relative position on the sonority scale. Such unconditional, non-directional, free variation is contradicted by specific relationships between variants and their environment or context (see Docherty & Foulkes) and by the greater stability of the place distinction in comparison to the manner distinction. In several papers the place dimension of front (alveolar, apical, etc.) versus back (posterior, dorsal, uvular, etc.) turns out to be the most stable or persistent one (e.g., Sankoff, Blondeau & Charity, Verstraeten & Van de Velde). This seems to be contradicted by Van Oostendorp's claim that /r/ can behave like an empty segment, including the place feature (the fewer features a segment has, the more chameleonic its behaviour is). In British English the labial component (gesture) is retained at the cost of the lingual articulation (Docherty & Foulkes), indicating a directional change.

3.2. Coarticulation

Denton discusses the impact of /r/ on the preceding vowel. The /r/ is involved in a disproportionate number of major vowel changes. It seems unlikely that any other single phoneme has had such an impact on the development of sound patterns in the Germanic languages. She contradicts Wiese by means of her conclusion that different /r/ variants have a different impact on vowel properties. Demolin's analyses show that further instrumental analyses will contribute to our understanding of the role of co-articulatory processes, a phenomenon which is also studied by West (2000). The same applies to Docherty & Foulkes' paper, who present F3 measurements which indicate a difference between initial and intervocalic realizations (syntagmatic coarticulation).

3.3. Syllable (or phrases, constituents, etc.)

The range and selection of /r/ variants differs depending on the position of the /r/ in the syllable (onset, coda or rhyme) phrase, constituent or utterance. This effect is discussed in several contributions (e.g., Demolin, Goeman & Van de Velde, Torp, Wiese). Van Oostendorp claims an important role of the FINALC constraint. Van Oostendorp's perspective is interesting for the interpretation of the results of Van den Heuvel & Cucchiarini.

3.4. Co-occurrence

Two papers explicitly discuss the linguistic embedding of /r/ in the phonological system of a language. Goeman & Van de Velde investigate constraints on variants of the fricative /ɣ/ and the /r/. They focus on the combination of a uvular fricative and a uvular trill. Torp discusses the constraints between the presence of retroflex consonants and the dorsal /r/. The conclusion is that co-occurrence constraints can be forceful.

3.5. Social embedding

The labiodental approximant [ʋ], has a special social-geographical distribution in England. The working class is leading this change, young men being the forerunners (Foulkes & Docherty, Llamas). This covert prestige change is related to other consonantal patterns of change. It means that the /r/ change has a social embedding in a package of changes. Other papers demonstrate how intensively the /r/ is involved in processes of variation in change in the languages investigated. It seems to make the /r/ attractive for comparative research on processes of the social embedding of language change, even within life spans (cf. Sankoff, Blondeau & Charity).

4. REFERENCES

Chambers, J. & Trudgill, P. (1980). Dialectology. Cambridge: Cambridge University Press.

Howell R. (1991). Old English breaking and its Germanic analogues. Tübingen: Max Niemeyer.

Labov W. (1966). The Social Stratification of English in New York City. Washington D.C.: Center for Applied Linguistics.

Ladefoged P. & Maddieson, I. (1996). Sounds of the World's Languages. Oxford: Blackwell.

Maddieson, I. (1984). Patterns of Sound. Cambridge: Cambridge University Press.

Trudgill P. (1974). Linguistic change and diffusion: description and explanation in sociolinguistic dialect cartography. Language in Society 3, 215-246.

van Reenen, P. (1994). Driemaal /r/ in de Nederlandse dialecten. Taal en Tongval 46, 54-72.

Walsh Dickey, L. (1997). The Phonology of Liquids. Amherst: University of Massachusetts.

West, P. (2000). 'Perception of distributed coarticulatory properties of English /l/ and /r/.' Journal of Phonetics: 405-426.