

# Contents

<b>Preface</b>	<b>ix</b>
<b>Acknowledgements</b>	<b>xi</b>
<b>1 Introduction</b>	<b>1</b>
<b>1.1 <i>r</i>-variation</b>	<b>3</b>
1.1.1 Cross-linguistic variation	3
1.1.2 Dutch <i>r</i> -variation	6
<b>1.2 Dimensions of language variation</b>	<b>7</b>
1.2.1 Phonological variation: allophony and the phonetics-phonology distinction	8
1.2.2 Stylistic and 'free' variation	12
1.2.3 Sociolinguistic variation	13
1.2.4 Geographical dialect variation	14
<b>1.3 The theoretical model</b>	<b>16</b>
1.3.1 Usage-based phonology and Exemplar Theory	17
1.3.2 Diachronic explanations for phonological patterns	23
1.3.3 Modelling <i>r</i> -variation: from family resemblance to family relationships	28
<b>1.4 Outline of the thesis</b>	<b>31</b>
<b>2 Previous accounts of <i>r</i>-variation in Dutch</b>	<b>33</b>
<b>2.1 Dutch dialect studies</b>	<b>33</b>
<b>2.2 Urban accents of Dutch</b>	<b>37</b>
2.2.1 The Netherlands	38
2.2.2 Flanders	40
<b>2.3 Standard Dutch</b>	<b>41</b>
2.3.1 Increasing variation of <i>r</i> in Standard Dutch?	41
2.3.2 Recent studies of <i>r</i> -variation in Standard Dutch	42
2.3.3 Conclusion: Standard Dutch and variability	45

<b>3</b>	<b><i>r</i>-variation in urban accents of Dutch</b>	<b>47</b>
<b>3.1</b>	<b>Design of the <i>HEMA</i> urban accent corpus</b>	<b>48</b>
3.1.1	Definitions of Standard Dutch and urban accents	48
3.1.2	Cities in the corpus	49
3.1.3	The speakers	51
3.1.4	The <i>r</i> -items	52
3.1.5	Data collection and processing	54
<b>3.2</b>	<b>Distinguishing <i>r</i>-variants</b>	<b>56</b>
3.2.1	An acoustic description of the variants	57
3.2.2	A description of the index scores used	71
<b>3.3</b>	<b>Results</b>	<b>73</b>
3.3.1	Frequency of variants in the corpus	73
3.3.2	Allophonic variation: frequency of variants by syllabic context	75
3.3.3	Geographical, social and allophonic variation: index scores	77
<b>3.4</b>	<b>Patterns of <i>r</i>-variation in urban accents</b>	<b>86</b>
3.4.1	Antwerp	86
3.4.2	Bruges	89
3.4.3	Ghent	93
3.4.4	Hasselt	96
3.4.5	Amsterdam	99
3.4.6	Rotterdam	102
3.4.7	Utrecht	107
3.4.8	Leiden	110
3.4.9	The Hague	115
3.4.10	Nijmegen	120
<b>3.5</b>	<b>Conclusion</b>	<b>123</b>
<b>4</b>	<b><i>r</i>-variation: trills, taps and fricatives</b>	<b>125</b>
<b>4.1</b>	<b>Alveolar and uvular <i>r</i> in Dutch</b>	<b>125</b>
4.1.1	The geographical distribution of alveolar and uvular <i>r</i> in Dutch	126
4.1.2	The linguistic distribution of alveolar and uvular <i>r</i> in Dutch	129
4.1.3	Uvular <i>r</i> in Germanic as a French import: <i>Trautmann's hypothesis</i>	130
4.1.4	The origin of uvular <i>r</i> in Dutch	132
4.1.5	The articulatory complexity of apical trills	134
4.1.6	Acoustic similarity between apical and uvular trills	135
<b>4.2</b>	<b>Trills and fricatives</b>	<b>137</b>
4.2.1	The phonetic properties of trilled <i>r</i>	138
4.2.2	The distribution of trills in urban accents of Dutch	140
4.2.3	The aerodynamics of trills	151
4.2.4	Trills, voicing, and frication	154
4.2.5	Trill complexity and cross-linguistic frequency	156
4.2.6	Fricative <i>r</i> in Dutch	157
4.2.7	Fricative realisations of <i>r</i> in the urban dialects	157

<b>4.3</b>	<b>Taps</b>	<b>170</b>
4.3.1	Taps versus trills	171
4.3.2	Taps in the urban accent data	174
<b>4.4</b>	<b>Conclusion</b>	<b>179</b>
<b>5</b>	<b><i>r</i>-variation: approximants and vowels</b>	<b>183</b>
<b>5.1</b>	<b>Approximant <i>r</i>-variants</b>	<b>184</b>
5.1.1	Approximants as lenition variants of <i>r</i>	184
5.1.2	Weakening to approximants and vocalisation in Articulatory Phonology	186
5.1.3	Approximants in the urban dialect data	188
5.1.4	Alveolar approximant <i>r</i> in the urban accent data	191
5.1.5	Uvular approximant <i>r</i> in the urban accent data: onsets	194
<b>5.2</b>	<b>The retroflex/bunched approximant and the palatal glide</b>	<b>196</b>
5.2.1	The origin of the retroflex/bunched approximant in Dutch	198
5.2.2	The articulatory properties of retroflex/bunched <i>r</i>	200
5.2.3	The origin of the retroflex/bunched approximant revisited	207
<b>5.3</b>	<b>Other vocalic variants of <i>r</i> in the Dutch dialect data</b>	<b>210</b>
<b>5.4</b>	<b>The ‘zero’ variants: <i>r</i>-deletion</b>	<b>217</b>
5.4.1	Accounts of coda <i>r</i> -deletion in Dutch	217
5.4.2	Coda- <i>r</i> deletion in the HEMA corpus	220
<b>5.5</b>	<b>Conclusion</b>	<b>222</b>
<b>6</b>	<b>Implications for phonology</b>	<b>225</b>
<b>6.1</b>	<b>Phonotactics of Dutch /<i>r</i>/</b>	<b>226</b>
<b>6.2</b>	<b>Representations of /<i>r</i>/</b>	<b>228</b>
6.2.1	Full specification in Generative Phonology	228
6.2.2	Alternatives to full specification: underspecification and Government Phonology	231
6.2.3	Capturing the unity and variation of <i>r</i>	232
6.2.4	Representing variation and phonetic detail: Exemplar models	234
<b>6.3</b>	<b>Schwa-insertion/intrusion</b>	<b>235</b>
6.3.1	Schwa-insertion: a phonological account	236
6.3.2	Schwa-intrusion: a phonetic account	238
6.3.3	Schwa-insertion in the urban accent data	240
6.3.4	The phonetics of schwa-insertion	246
6.3.5	Schwa-insertion before coronal obstruents	259
<b>6.4</b>	<b>Conclusion</b>	<b>267</b>

<b>7</b>	<b>Summary, discussion and conclusions</b>	<b>269</b>
<b>7.1</b>	<b>The <i>HEMA</i> corpus of urban accent data</b>	<b>269</b>
7.1.1	Dutch <i>r</i> variants	270
7.1.2	The use of <i>r</i> variants across accents	270
7.1.3	Sociolinguistic and allophonic variation: index scores	274
7.1.4	The urban accent corpus: conclusions	278
<b>7.2</b>	<b>A model of rhotic relationships</b>	<b>279</b>
7.2.1	Trills, taps and fricatives	281
7.2.2	Approximants and vowels	283
<b>7.3</b>	<b>Implications of the family relationships model</b>	<b>286</b>
7.3.1	Capturing the unity in <i>r</i> -variation	286
7.3.2	The role of diachrony in linguistic theory	288
7.3.3	Lenition and articulatory reduction	288
7.3.4	Representational issues	290
<b>7.4</b>	<b>Closing remarks</b>	<b>291</b>
7.4.1	How extraordinary is Dutch <i>r</i> -variation?	291
7.4.2	Synthesising sources of linguistic evidence	292
	<b>References</b>	<b>295</b>
	<b>Samenvatting in het Nederlands</b>	<b>313</b>
	<b>Curriculum Vitae</b>	<b>319</b>