The Longitudinal UCU Corpus of English Accents

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Convergence in production

<table>
<thead>
<tr>
<th>L1: drastically</th>
<th>L2: mildly</th>
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<tr>
<td>chair'man (eɪˈmæn)</td>
<td>chair'man (eɪˈmæn)</td>
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reduction of unstressed syllables

strong syllables are relatively frequent

rhythm assessed from modulation of intensity contour

peak freq of intensity envelope tends to peak 3 times/s

in prosody sentences read by 18 talkers (3 L1, 15 L2) who completed all 5 sessions

- L2'ers: no change
- L1'ers: initially higher then convergence towards L2 values decreasing variance between talkers (but n.s. with 14 talkers)

phonetic convergence in produced speech rhythm:
- native L1’ers converge towards nonnative L2’ers (majority)
- decreasing between-speaker variance in rhythm

University College Utrecht

interdisciplinary, undergraduate competitive, intense

~750+ students

English lingua franca, no pronunciation training

L1: 60% Dutch, 10% English, 30% other

Hyp: emergent UCU English Accent due to phonetic convergence (e.g. Porto 2006)

longitudinal corpus

- 5 interviews over 3 years
- 4 cohorts
- metadata: entry & exit questionnaires, audiometry
- EN read texts: Rainbow Passage (Fairbanks, 1990), Wolf Story (Clements, 2004), prosody sentences (White & Maye, 2007), intelligibility sentences (Van Wagenaar et al 2002), UN Declaration of Human Rights (Bradlow et al 2011)
- L1 read text: UN Decl of Human Rights
- L1 and EN unscripted monologues, EN dialogue

~850 interviews

~3.5 TB speech data

speech technology tools

Convergence in perception

H: converged speech (R2, R3) is more intelligible than unconverged speech (R1), for ‘trained’ listeners intelligibility assessed as Speech Reception Threshold of recorded intelligibility sentences from corpus

Speech/Noise Ratio in dB yielding 50% accuracy; assessed by adaptive procedure (2 dB steps); average SNR over last 10 presentations (Van Wagenaar et al 2002)

- talkers’ L1: 9 English, 15 Dutch, 6 German
- listeners’ L1: 5 English, 33 Dutch, 7 Eng+Dutch
- Round: R1, R2, R3

listeners never heard a list which they themselves had spoken, and listeners never heard their own voice.

- at R2: β =−0.5 (p=.045), more intelligible
- at R3: β =+0.2 (n.s.), same as at R1
- German talkers:
  - β =+0.7 (p=.044), worse
  - smallest variance at R2

phonetic convergence in speech intelligibility:

- same talkers have become more intelligible after convergence (at R2) than before (at R1)
- lower SRT; less variance in SRT between talkers and between listeners
- summer break (between R2 and R3) annihilates talkers’ (perceptual advantage) of phonetic convergence
- plasticity remains after 9 months of convergence
- no interlanguage benefits (talker-listener interaction)

all talkers and listeners highly proficient in English (p.t.Bos & Bradlow, 2003; Hoyt-Hoek et al 2008)