# L1 phonetic drift in Dutch L2 speakers of English ?

Rosemary Orr, David van Leeuwen, Jacky Zoë de Rode,
Georg Lohfink and Hugo Quené

ICPhS2015 satellite workshop on Phonetic Learner Corpora
Wed 12 Aug 2015, Glasgow

---

# accommodation

- participants in conversation **converge** (accommodate to each other)

- phonologically, phonetically, stylistically

- to decrease social distance (Pardo, 2011)

- even without social context in word repetition task (Goldinger, 1998)

- subconscious and automatic (Trudgill, 2008)
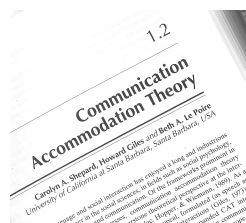
# University College Utrecht

- bachelor college in Anglosaxon fashion
  - 3 year undergrad program
  - academic *Bildung*
  - ca 3x220 students

- English used as lingua franca

- selective, competitive, intensive

- also intensive social life



# UCU English accent

- multilingual, students' L1s are 5% English, 60% Dutch, 35% others

- no pronunciation training, minimal environmental effects

- unique (distinct) variety of L1/L2 English

# phonetic drift in L1?

- does long-term accommodation/convergence (to L2 English) correspond with **phonetic drift in L1**? (cf. Chang, 2011)

- informally suggested by L1 Dutch students at UCU

# LUCEA: Longitudinal Corpus of UCU English Accents

- 4 cohorts:
  2010 ($n$=75),  2011 ($n$=78),
  2012 ($n$=68),  2013 (n=61)

- 5 interviews (rounds) over 3 year

- ca 850 recordings, each ~20 minutes of speech

- metadata from questionnaires and audiometry
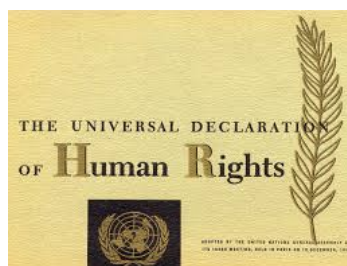
# corpus speech content

- EN read texts

  Rainbow Passage (Fairbanks, 1960), Wolf Story
  (Deterding, 2006), prosody sentences (White & Mattys,
  2007), intelligibility test sentences (Van Wijngaarden ea,
  2002), UN Decl Human Rights (UN, 1948; Bradlow, 2011)

- L1 read texts

  UN Decl Human Rights

- EN/L1 unscripted monologues

- EN unscripted dialogue



---

# VOT (/t/, /d/) and COG (/s/)

- VOT may indicate foreign accent

  - VOT in Dutch /t/ similar to English /d/
    (e.g. Collins & Mees, 2013)

  - VOT in Dutch /d/ shorter (more voice lead)
    than in Eng /d/, e.g. in /dɛn/

  - VOT in Dutch /t/ shorter than in Eng /t/, no aspiration

- Centre of gravity of frequency (COG)
  lower in Dutch than in English
  (e.g. Lowie & Bultena, 2007; Wieling et al, this conf, P3.36)

  - /s/~/z/ voicing contrast weaker in Dutch than in Eng,
    e.g. in /væn/

# methods & materials

- Dutch L1 speakers of L2 English
  (cohorts 2010 and 2011; high proficiency; N=50)

- recorded with close-talking microphone
  in quiet furnished office

- 2-minute monologues from first and last recordings

- word-inital /d/ and /t/, and all instances of /s/

# parameters

- voice onset time (VOT)

  - using *Praat;* manual segmentation;
    from stop burst to onset of voicing

- centre of gravity of frequency (COG)

  - using *Kaldi* speech recognition system for
    segmentation; mean of spectral energy
    distribution over segment

# LMM analysis

linear mixed effects model (*lme4* R package)

- fixed: *sex* (F,M)*, recording* (1,5)*, language* (N, E)

- random effect: *speaker*

    - by-speaker random slopes for
      effects of *recording* and *language*

# VOT results

- **no** longitudinal drift between rounds 1 and 5

- in /d/: no significant difference Eng-Dutch
  (ie: no increase of voice lead for Eng)

- in /t/: in English +29 ms as compared to Dutch

# COG results

- significantly lower in Dutch /s/ than Eng /s/

- **no** longitudinal drift between rounds 1 and 5



Male values for centre of gravity for /s/
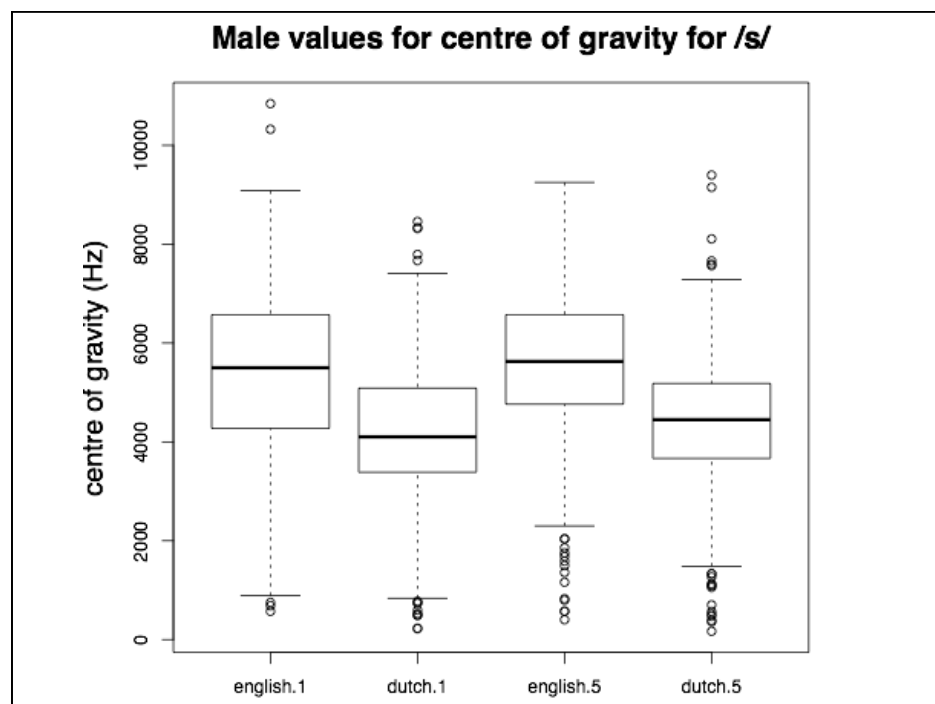
# discussion

- difference in VOT of /t/ between languages
  suggests separate categories of /t/ for L1 Dutch (unaspirated)
  and L2 English (aspirated), even before first recording

- lack of difference in VOT of /d/
  suggests merged categories of /d/ across languages,
  throughout all recordings (no drift)

- difference in COG between languages
  suggests separate categories of /s/ for L1 Dutch and L2
  English, even before first recording (no drift)

- **speakers were already highly proficient** in L2 English
  (with separate variants for L1 and L2 /t/ and /s/)
  at first recording

- **no further drift** in COG nor VOT observed across recordings

# considerations

- unusual community: L1 speakers minority, L2 speakers dominant

- may contribute to stability of segments over time,
  despite English-speaking environment

- phonetic features of Dutch may be adopted by other speakers

  - this would be in line with accommodation theory

  - with English L1 speakers in the minority,
    their influence is expected to be relatively weak

  - speakers of other L2s may be phonetically influenced by Dutch

thank you!