

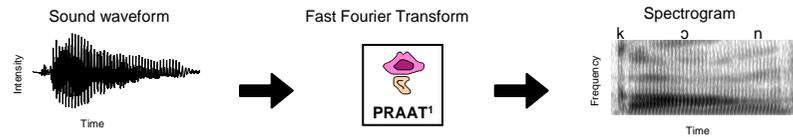
Analysing consonantal speech sounds: a sociophonetic approach

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Sociophonetics

- Explaining language variation and change by exploring correlations between social factors (age, gender, speech style, in-group status, etc.) and phonetic or phonological form
- Method
 - Acoustic analysis (using waveforms and spectrograms)
 - Quantitative

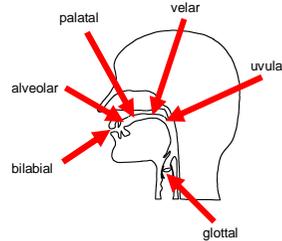
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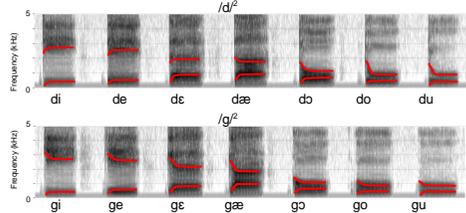
Consonants

Phonetic classification of Consonants

- **Place of Articulation:** where the constriction is
 - bilabial, alveolar, palatal, velar, uvular, pharyngeal, glottal
- **Manner of Articulation:** how much constriction there is
 - plosive, fricatives, nasal, approximant, lateral approximant, lateral fricative, trill, tap
- **Voicing:** whether vocal cords vibrate or not
 - voiced, devoiced



Consonants and Spectrograms

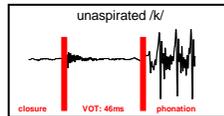


- Consonants on themselves do not have a clear formant structure
- Formant transitions cue the **loci** of consonants

Examples of consonant properties investigated in sociophonetic studies

VOT: voice onset time of plosives

- VOT of /p, t, k/ by heritage language speakers in Toronto (Nagy & Kochetov 2011)
 - VOT is longer for /p, t, k/ in English than in Italian, Russian, and Ukrainian
 - 1st Generation Russian Speakers < 2nd Gen. < 3rd Gen.
 - [22 ms] [30 ms] [51 ms]



Fricative devoicing

- Dutch devoicing of voiced fricatives, /z/ and /v/ → /s/ and /f/ (Kissine, Van de Velde & van Hout 2003)
 - Regional variation: devoicing more prevalent in the Netherlands when compared to Flanders

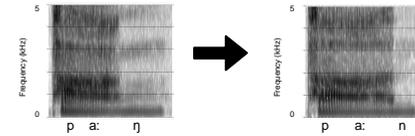
Rhoticity

- /r/ in urban dialects of Flanders and the Netherlands: shows variation in place and manner of articulation
 - place of articulation varies according to urban areas
 - manner of articulation shows a north-south divide

Case study: velar nasal alveolarisation in Cantonese

Background

- Alveolarisation: sound change in progress in Cantonese, /ŋ/ → /n/ if preceded by /a:, œ:, ε:, ɔ:, ɐ/ (Bauer, 1979; Wong 2005, Shum 1993)



- Problem: previous studies have used auditory analysis and mostly binary assignment of dependent variable values
 - only reported percentage innovative [n] use (Wong 2005, Shum 1993)

Aims

- Find out whether alveolarisation in Cantonese correlates with social factors (age, gender), and if yes, whether there is evidence for change in progress.
- Find out whether linguistic constraints operate on the (ŋ) variable
 - preceding vowel
 - lexical frequency effects

Method

- Sample: 30 speakers: 15 males 15 females, three age-groups (13-18; 19-45; 46-70)
- Sociolinguistic interview: informal, map reading task, reading passage, word list, minimal pairs
- Minimal pair perception task
- Acoustic analysis: coding for alveolar nasals, velar nasals, and degree of nasalisation of preceding vowel

Preliminary Results

- The (ŋ) variable seems to display age variation (older speakers tend to use more /ŋ/ while younger speakers tend to use more /n/)
- But neutralisation of velar and alveolar nasal contrast does occur, and so a binary assignment of dependent variable values misses out on this complex variation pattern
 - remnant in the form of nasalisation of preceding vowel

Discussion

- Nasalisation (of preceding vowel) is perhaps available to listeners as a cue for a nasal velar or alveolar
- Future analysis can be directed towards F1, F2 characteristics of vowels preceding velar and alveolar nasals as a further cue available to speakers

Notes and References

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