Vowel variation in Manchester: a dynamic approach

This paper investigates the sociophonetic advantages of multiple formant measurements for defining vowel trajectories through an analysis of vowel variation in Manchester English. While a growing body of research shows that dynamic approaches to vowel characterisation afford greater speaker discrimination than steady-state measurements (Greisbach et al. 1995, Ingram et al. 1996), no published work has focussed on the application of such methods to variationist studies.

Tokens of monophthongs (GOOSE and STRUT) and diphthongs (FACE and GOAT) were segmented from word list recordings of 18 speakers (10 males, 8 females) aged 18-24 (young) and 50-68 (old). Adopting McDougall's (2004) method, time-normalised measurements of F1 and F2 at +10% steps across the vowel trajectory were extracted using a Praat script. Values were averaged by speaker and age/gender group and normalised using the modified Watt and Fabricius (2002) method.

Our results support two main findings. Firstly, GOOSE and GOAT fronting are most advanced among younger speakers. In terms of GOAT production, there is a gender effect among younger speakers, with females showing more fronted trajectories. These findings are consistent with results from steady-state studies (Watt and Tillotson 2001, Hawkins and Midgley 2005, Flynn forthcoming). In light of Kerswill and Williams' (2005) findings, these results may reflect diffusion of fronted GOAT and GOOSE from the South-East.

Secondly, dynamic measures are shown to offer greater value in defining the phonetic reality of vowel production than a traditional 'static' approach. A comparison with GOAT fronting in York (Haddican et al. 2010) reveals that younger females in the two communities employ different dynamic articulatory strategies, despite fronting to a similar extent. In York, fronted realisations were produced with c-shaped curves, while straight line trajectories were common among younger females in Manchester. These results therefore reveal social correlates of vowel trajectory shape not detectable using steady-state techniques.

References

Flynn, N. E. J. (forthcoming) Levelling and diffusion at the North/South border: a sociophonetic study of Nottingham speakers [working title]. PhD dissertation. York: University of York

Greisbach, R., Osser, E. and Weinstock, C. (1995) Speaker identification by formant contours. In A. Braun and J. Köstner (eds.), *Studies in Forensic Phonetics. Beiträge zur Phonetik und Linguistik 64.* Trier: Wissenschaftlicher Verlag Trier. 49-55.

Haddican, W., Richards, H. and Foulkes, P. (2010) FACE values: the meaning of mid-vowels in Northern England. *CUNY Sociolinguistics Lunch 15/10/10.*

Hawkins, S. and Midgley, J. (2005) Formant frequencies of RP monophthongs in four age groups of speakers. *Journal of the International Phonetic Association* 35(2): 183-199.

Ingram, J. C. L., Prandolini, R. and Ong, S. (1996) Formant trajectories as indices of phonetic variation for speaker identification. *Forensic Linguistics* 3(1): 129-145.

Kerswill, P. and Williams, A. (2005) New towns and koineization: linguistic and social correlations. *Linguistics* 43(5): 1023-1048.

McDougall, K. (2004) Speaker-specific formant dynamics: An experiment on Australian English /aɪ/. *International Journal of Speech, Language and the Law* 11(1): 103-130.

Watt, D. & Tillotson, J. (2002) A spectrographic analysis of vowel fronting in Bradford English. *English World-Wide* 22(2): 269-302.

Watt, D. and Fabricius, A. (2002). Evaluation of a technique for improving the mapping of multiple speakers' vowel spaces in the F1~F2 plane. In Nelson, D. (ed.) *Leeds Working Papers in Linguistics and Phonetics* 9: 159:173.