

Developing graphical methods in sociophonetics: outlines of a research agenda

Recent work carried out in sociophonetics (Fabricius (2007), Fabricius Watt and Johnson (2009), Watt, Fabricius and Kendall (2010) and Fabricius and Watt (2010)) has extended and expanded the discussion of appropriate mathematical methods for graphical representation of vowel formant data. Work on comparisons of normalization algorithms for enhanced statistical tractability (Adank 2003; Adank, Smits and van Hout 2004; Fabricius, Watt and Johnson 2009) is also proceeding apace. Fabricius, Watt and Johnson (2009), for example, presented a set of metrics for evaluating the effectiveness of normalization procedures according to measurable geometrical criteria. As the authors see it, this area of research is a fertile ground for a continued meeting of minds between experimental phonetics and sociolinguistics. Publications such as Labov (1994, 2001) and *ANAE* (Labov, Ash and Boberg 2006) can contribute a fuller understanding of appropriate treatments of intra- and inter-speaker variation, both synchronically and diachronically. Experimental phonetics on the other hand can contribute with other approaches to the comparison of vowel data sets (see e.g. the overview in Harrington 2010). The development of theories concerning phonetic change can only benefit from explorations that lead towards better understanding of best practice in this core area of sociophonetics.

This poster will exemplify current issues and their potential solutions in this area by presenting examples of our research work in this field; specifically, we will demonstrate a recently developed method of modeling vowel configurations around a vowel space centroid (see Figure 1). The poster will also give examples of further research questions which, as we see it, could profitably be tackled. These include exploring the nature of the centre-periphery distinction which plays a role in vowel changes as modeled by Labov 1994, among others.

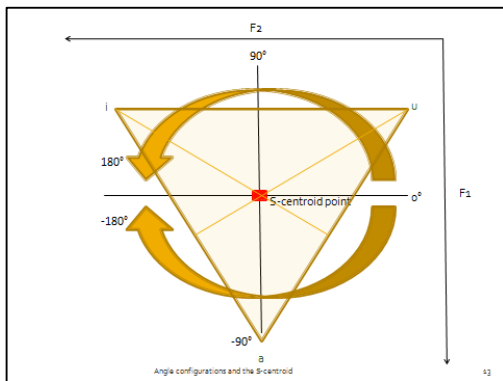


Figure 1: Schematic diagram of a method that models angular juxtapositions for vowel F1/F2 planar locations, using the S-centroid point (Fabricius, Watt and Johnson 2009) as point of origin.

Adank, Patti. 2003. Vowel normalization: a perceptual-acoustic study of Dutch vowels. PhD thesis, University of Nijmegen.

Adank, Patti, Roel Smits, and Roeland van Hout. 2004. A comparison of vowel normalization procedures for language variation research. *Journal of the Acoustical Society of America* 116, 3099–3107.

Fabricius, Anne. 2007. Variation and change in the TRAP and STRUT vowels of RP: a real time comparison of five acoustic data sets. *Journal of the International Phonetic Association* 37:3: 293-320.

Fabricius, Anne, Dominic Watt and Daniel Ezra Johnson. 2009. A comparison of three speaker-intrinsic vowel formant frequency normalization algorithms for sociophonetics. *Language Variation and Change*, 21,3:1-23.

Fabricius, Anne and Dominic Watt. 2010. *Angle configurations and the S-centroid: modeling changing planar locations in the vowel space*. Paper presented at workshop “Beyond Averages: Different ways of looking at vowel variation”. Sociolinguistics Symposium 18, Southampton. September 2010.

Harrington, Jonathan. 2010. Acoustic Phonetics. In Hardcastle, William J., John Laver and Fiona E. Gibbon (eds). *The Handbook of Phonetic Sciences: Second edition*. Blackwell Publishing, 2010.

Labov, William. 1994. *Principles of Linguistic Change. Volume I: Internal Factors*. Oxford: Basil Blackwell, 1994.

Labov, William. 2001. *Principles of Linguistic change. Volume II: Social Factors*. Oxford: Blackwell, 2001.

Labov, William, Sharon Ash and Charles Boberg. 2006. *Atlas of North American English: Phonology and Phonetics*. Berlin: Mouton/de Gruyter. 2006.

Watt, Dominic, Anne Fabricius and Tyler Kendall. 2010. More on Vowels: Plotting and Normalization. To appear in Yaeger-Dror, Malcah and Marianne Di Paolo. (eds). *Sociolinguistics: A Student’s Guide*. London: Routledge.