

The Marriage of Sociolinguistics and Phonetics: The Honeymoon is Over

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Sociolinguistic research has increasingly wedded itself to acoustic phonetic methods because they promise to reveal fine-grained details of pronunciation in an objective and replicable way. However, the tendency of sociophonetic work to rely on F1 and F2 measurements at a single temporal location, described as the vowel nucleus (Labov 1994; Fought 1999) or “steady state” (Fridland 2003), is problematic because these formant frequencies may lack information crucial to vowel perception and phonological distinctiveness. Fridland (2003) and Thomas (2001) report taking F3 measurements, and Labov (1994) notes that F3 is important in the perception of high front vowels, but they restrict their analyses to F1 and F2. We suggest that (1) formant transitions between vowels and consonants should also be examined, as should (2) the role of F3. We argue that, without these additional dimensions, acoustic analysis is actually less useful than traditional transcription (e.g. LAMSAS), because highly-trained impressionistic coders can react to perceptually relevant information which is lost in studies restricted to F1/F2 at vowel midpoint.

After brief coverage of the detail available in traditional impressionistic transcriptions, we present the results of two methodological experiments on acoustic data extracted from sociolinguistic interviews with six African American females. The first tests the hypothesis that offset values for F1 and F2 do not introduce “noise” from the following consonant, but rather provide a picture of a vowel space with greater contrast and distinctiveness than that provided by midpoint measurements alone. The second experiment tests whether F3 is a significant dimension of variation between the high front and back vowels. The speakers show fronting of /u/ and /ʊ/ that is strongly conditioned by following place of articulation (significance confirmed by ANOVA tests), with pre-alveolar variants more fronted than pre-velar and pre-labial variants. Consideration of F1 and F2 midpoint values alone show that pre-alveolar /u/ and /ʊ/ are quite similar to their front counterparts. However, pre-alveolar /u/ and /ʊ/, but not pre-labial or pre-velar variants, show long offglides toward the back of the vowel space. The offglides can be accounted for by progressive backing and rounding, indicated by increased F2-F3 separation from midpoint to offset. Coarticulation, offset values, and rounding condition how the speakers’ vowel systems maintain distinctiveness between the high and semi-high back and front vowels.

Sociolinguists can most profitably enhance their understanding of vowel variation through acoustic analysis by using replicable methods to include the additional acoustic dimensions identified here. The more euphoric early stages of the courtship between sociolinguistics and phonetics might ignore such information, but we conclude that it is time for some difficult yet necessary long-term relationship building.

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