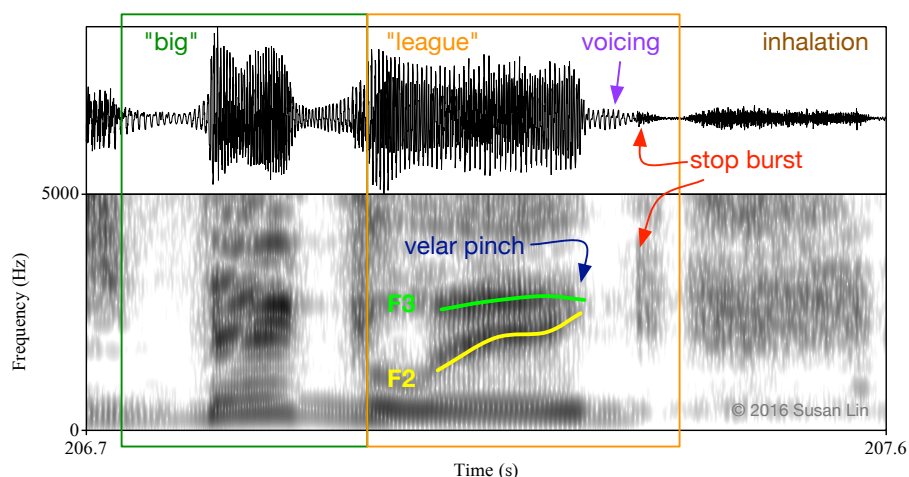


On “big league”

During the first¹ 2016 presidential debate between Donald Trump and Hillary Clinton, Mr. Trump used the phrase “big league” twice: “I’m going to cut taxes **big league**, and you’re going to raise taxes **big league**, end of story.” The figure below was generated using the audio from the first of these utterances, which I used Praat² to examine. The top half of this image is the acoustic waveform (a visual representation of sound), and the bottom half is a spectrographic analysis of the waveform, which decomposes the waveform into frequencies of high energy, visualized as dark horizontal bands. Linguists, especially phoneticians and phonologists, use these representations as well as measurements derived from these representations to study speech.



Of interest here is the use of acoustic analysis to reveal acoustic distinctions that may be difficult to hear, especially during running speech. The current case concerns whether Mr. Trump said “bigly” or “big league”, which we can reduce to the question of whether there is a final /g/ in the acoustic signal. Word-final /g/s have three common acoustic cues.

- Stop burst: pressure built up in the mouth results in a small explosion on stop release, visible in both waveform and spectrogram.
- Voicing: regular fluctuations in the waveform during the stop.
- “Velar pinch”: the second and third dark bands of energy (F2 and F3) during the vowel leading up to the stop approach each other.

The recording pictured here shows evidence for all three of these acoustic cues, which I interpret as strong evidence for a final /g/. However, because of the inherent variability of speech, sometimes one or more of these cues may be absent, or covered up by other noise, which may well lead to an alternate interpretation by listeners. In fact, Alan Yu (University of Chicago) has produced a similar analysis of Hillary Clinton’s August speech in which she promised to either raise or not raise taxes on the middle class. Yu’s analysis shows that Mrs. Clinton’s /n/ in “aren’t” is present but the /t/ is indistinct³.

This brief analysis is limited to this example (though I have personally examined a handful of others and found the same evidence). I can therefore neither validate nor refute claims that Mr. Trump has previously said “bigly”; I can only say that he has on several occasions used the phrase “big league”. I’d also like to point out that many other linguists have analyzed, in much greater detail, Mr. Trump’s usage of this phrase/word, most prominently in a series of blog posts on Language Log (most recently: <http://languageblog.idc.upenn.edu/nll/?p=24240>). My acoustic analysis only provides evidence in support of “big league,” rather than “bigly,” being the intended speech act.

¹ I worked with audio data from the first, not the third, most recent, debate.

² Free audio analysis software available at <http://www.fon.hum.uva.nl/praat/>

³ <http://www.politifact.com/truth-o-meter/statements/2016/aug/05/donald-trump/donald-trump-wrongly-says-hillary-clinton-wants-ra/>