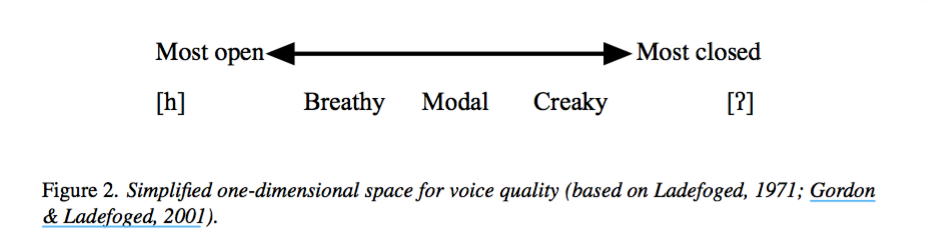
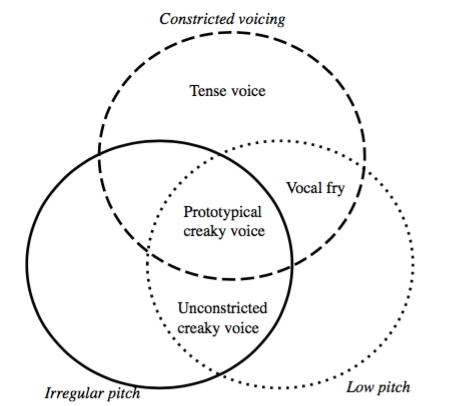
1. What phonation types are:
   1. Phonation types: different ways of producing sound through the vibration of the vocal cords (Keating and Esposito 2006: 85)
   2. Ladefoged saw phonation types as falling on a one-dimensional continuum based on the degree of glottal constriction:
   3. This representation, while useful, is somewhat of an oversimplification:
      1. There are different ways of producing each of these phonation types, which can be measured different acoustic correlates (Keating and Esposito 2006:
      2. For instance, recent research (Garellek 2016; Kreiman 2014; Keating, Garellek, and Kreiman 2014) suggests that there are multiple types of creaky voice, which exist in a three-dimensional space:
      3. Breathy voice can also result from various combinations of acoustic factors (Keating and Esposito 2006: 86)
   4. Applications of the study of voice quality:
      1. Speech synthesis:
      2. Forensic speaker identification:
2. These phonation types and their acoustic correlates are:
   1. Breathy voice:
      1. Higher H1–H2, H2–H4, H4–H2 kHz, H2 kHz–H5 kHz Lower HNR (Garellek 2016: 21)
   2. Prototypical creaky voice:
      1. Lower H1–H2 H2–H4, H4–H2 kHz, H2 kHz–H5 kHz Lower HNR (Garellek 2016: 21)
      2. Lower f0 (Garellek 2016: 21)
      3. Irregular f0 (Keating, Garellek, and Kreiman 2015: 3)
      4. /t/ glottalization vs phrasal creak: both are likely prototypically creaky (Garellek and Seyfarth 2016: 1057)
         1. /t/ Glottalization: primarily associated with noise (Garellek and Seyfarth 2016: 1057)
         2. Phrasal creak: primarily associated with f0 and spectral tilt (Garellek and Seyfarth 2016: 1057)
   3. Unconstricted creaky voice:
      1. Higher H1–H2 H2–H4, H4–H2 kHz, H2 kHz–H5 kHz Lower HNR (Garellek 2016: 21)
      2. Lower f0 (Garellek 2016: 21)
      3. Low HNR (Keating, Garellek, and Kreiman 2015: 3)
   4. Vocal fry:
      1. Lower H1–H2 H2–H4, H4–H2 kHz, H2 kHz–H5 kHz No difference in HNR (Garellek 2016: 21)
      2. BUT (Keating, Garellek, and Kreiman 2015: 3) says that this has high HNR values
      3. Lower f0 (Garellek 2016: 21)
      4. Low B1 values (Keating, Garellek, and Kreiman 2015: 3)
   5. Tense voice:
      1. Lower H1–H2 H2–H4, H4–H2 kHz, H2 kHz–H5 kHz No difference in HNR (Garellek 2016: 21)
      2. Higher f0 (Garellek 2016: 21)
   6. Multiply pulsed creak:
      1. High SHR (Keating, Garellek, and Kreiman 2015: 3)
      2. Low H1\*-H2\* (Keating, Garellek, and Kreiman 2015: 3)
      3. Low HNR (Keating, Garellek, and Kreiman 2015: 3)
   7. Aperiodic creak:
      1. Low HNR (Keating, Garellek, and Kreiman 2015: 3)
      2. Low H1\*-H2\* (Keating, Garellek, and Kreiman 2015: 3)
      3. Does NOT have low f0 (Keating, Garellek, and Kreiman 2015: 3)
3. Previous experimental and statistical methods that have been used to distinguish between these types of voice quality are:
   1. [FILL IN]
4. Previous research suggests that sex, ethnicity, and SES may play a role in production of creaky voice:
   1. Sex:
      1. Women may produce breathier voice than men (Podesva and Callier 2015: 178)  
         1. Simpson (2012) questions this
      2. Men may produce creakier voice than women, which could be due to their lower f0 (Podesva and Callier 2015: 178)
      3. Male speakers of RP may creak less than male speakers from northern England (?) (Podesva and Callier 2015: 178) (See Henton and Bladon 1988)
      4. Other gender differences in production of creaky voice include women in California and DC producing more creaky voice than males, Japanese women producing less creaky voice than American women, etc. (Podesva and Callier 2015: 178)
   2. Ethnicity:
   3. SES (?):
5. Gaps in the literature that we can address:
   1. Investigation of the status of voice quality specifically in British English:
      1. Last large-scale study was Henton and Bladon (1988)
   2. Investigations on large-scale corpora of subjects from different sexes, socioeconomic statuses, geographic locations, etc.:
      1. Previous investigations of voice quality have included relatively small samples, often of speakers of a specific dialect or from a particular area, e.g.:
      2. 40 adults from Ohio (Garellek and Seyfarth 2016: 1055)
      3. 22 adults (location and language unspecified) and 50 adults (native German speakers) (Simpson 2009: 1-2)
      4. 11 male and 12 female speakers of California English (Yuasa 2010: 321)
      5. Even the largest studies had less than 100 participants, e.g. Henton and Bladon (1988)