HS 133: Introduction to Phonetics

Instructor: Priyankoo Sarmah

So far in this course

- **Articulatory Phonetics**
  - How speech sounds are produced
  - Physiological basis of speech production

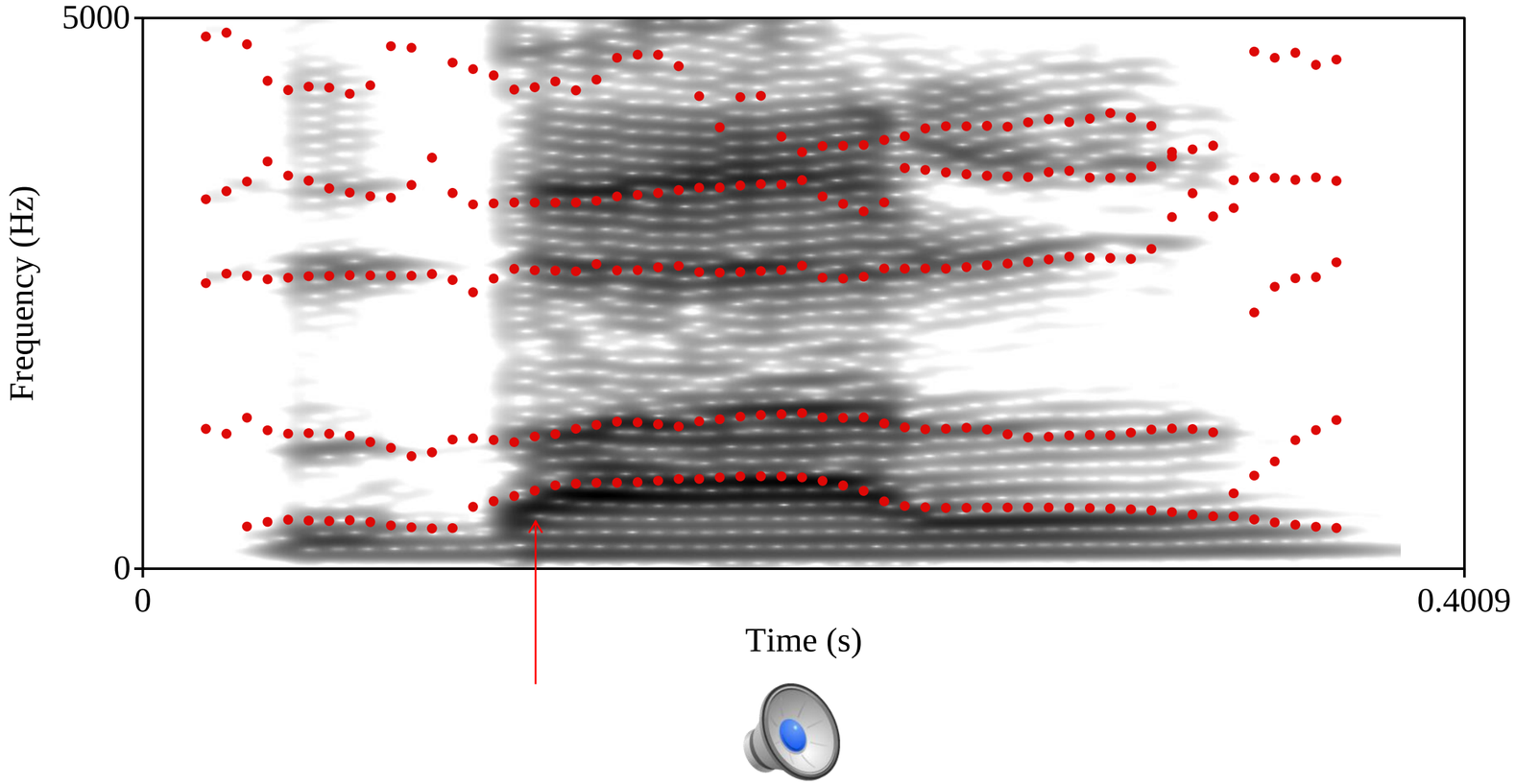
- **Acoustic Phonetics**
  - Source-filter theory
  - Signatures of various speech sounds
  - Correlation of articulation to acoustics

However…

- Speech is not discreet
- It is continuous
- People process speech as continuous entity
- The are influences and target undershoots in speech

Acoustics of consonants | Formant transitions

- Articulators take time to adjust
- Results in coarticulation
- Formants take time to adjust and be stable
- The change seen in the F1 and F2 at the juncture of consonants and vowels is **formant transition**



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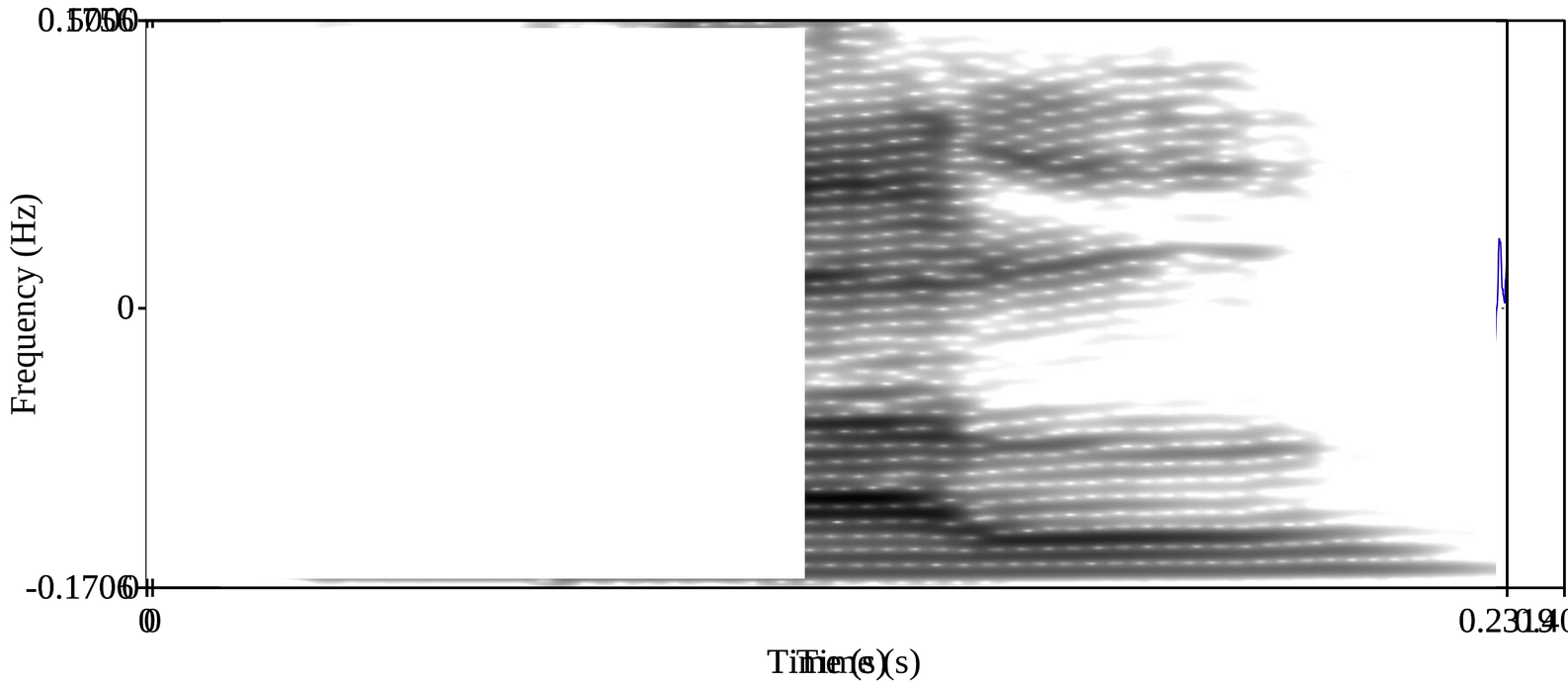
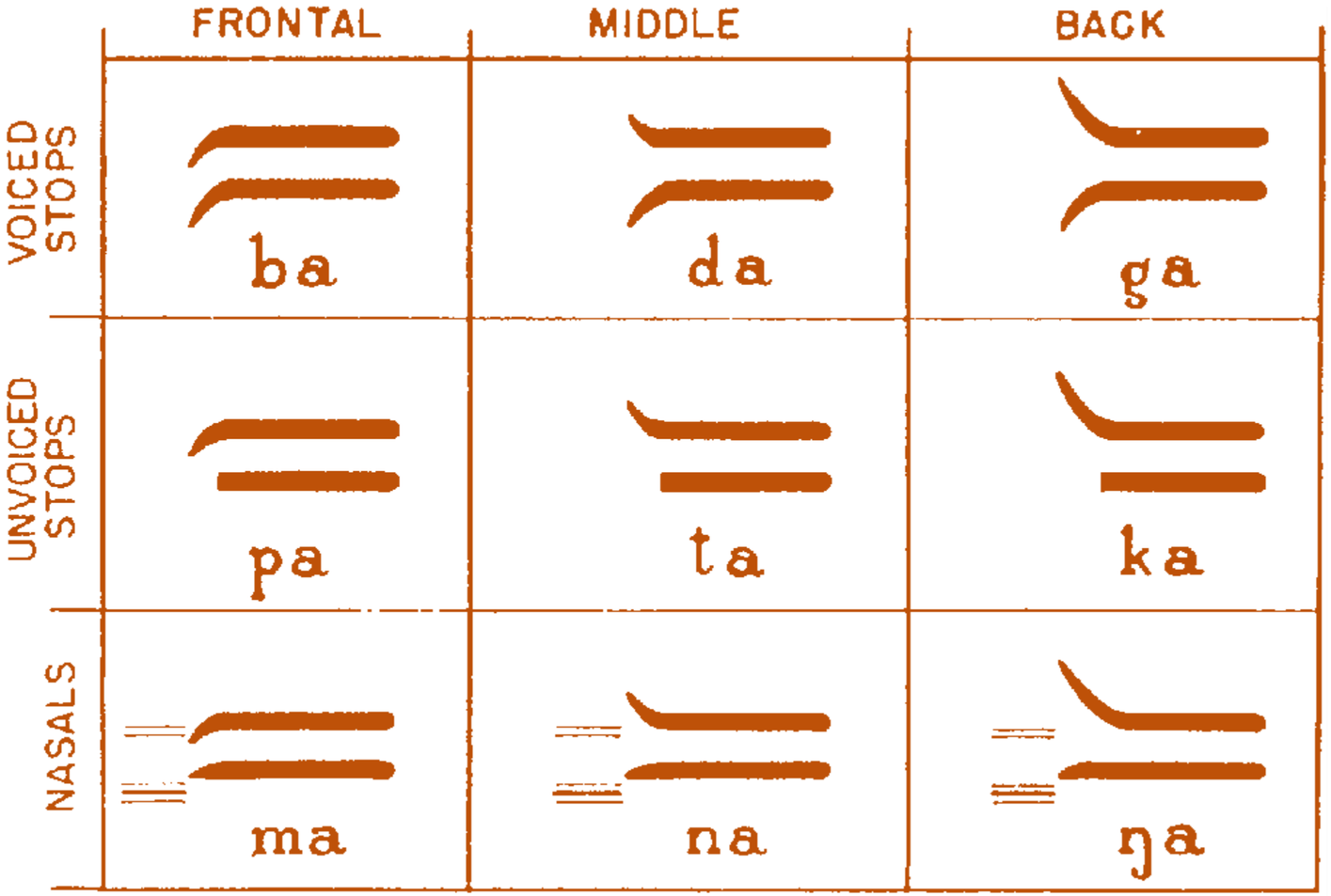
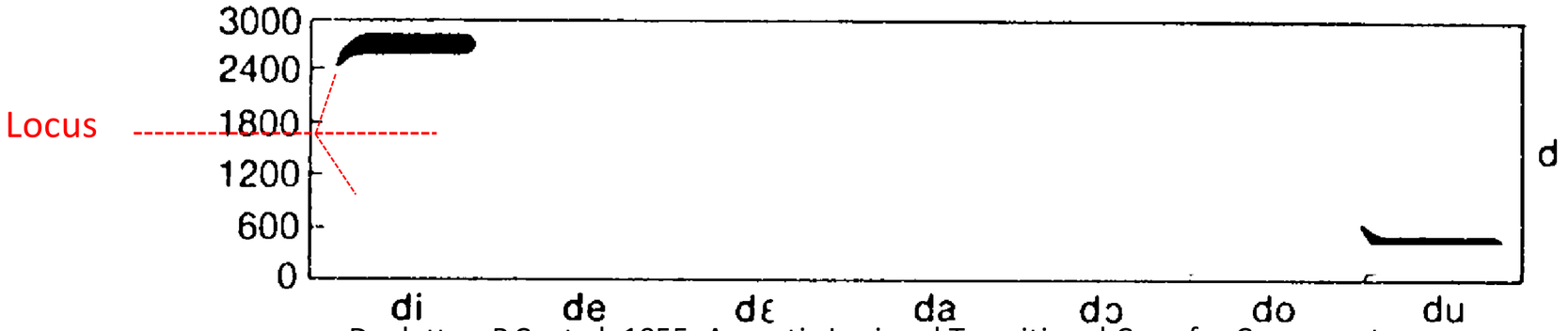


These kind of experiments were conducted much before the advent of computers

Acoustics of consonants | Formant transitions



Acoustics of consonants | Formant transitions and Locus



Dealattre, P.C. et al. 1955. Acoustic Loci and Transitional Cues for Consonants

- Alveolars have a locus of 1800 Hz.
- Bilabials have a F2 locus at about 800 Hz
- Velars have a locus of 3000 Hz for front vowels and 1200 Hz for back vowels.

Acoustics of consonants | Formant transitions

- Transitions have enough information about the place and manner of the consonants
- Usually F2 transition gives cue to the POA
- F1 transition gives cue to the MOA
- Enough information is available in the transition regions for consonant identification