Introduction to Speech Science: Tutorial exercise – Week 7

The spectrogram on the next page is of a spoken word with a CVCVC structure. To start, take a look at the spectrogram and try to divide it into C (consonant) and V (vowel) segments.

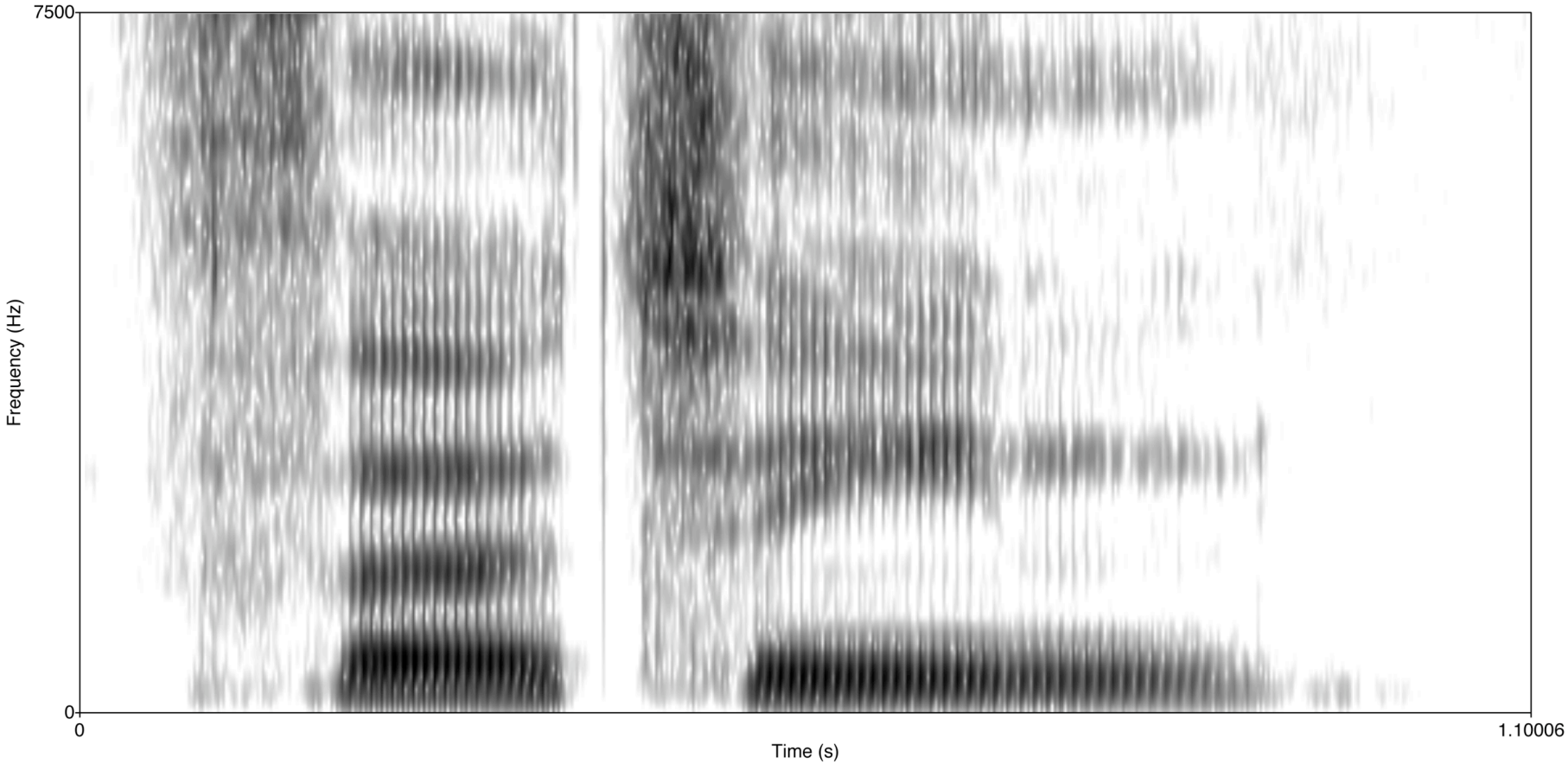
a) What is the manner of the initial consonant? Is it voiced or unvoiced? How can you tell?

b) What is the manner of the middle consonant? Is it voiced or unvoiced? How can you tell?

c) What is the manner of the last consonant? How can you tell?

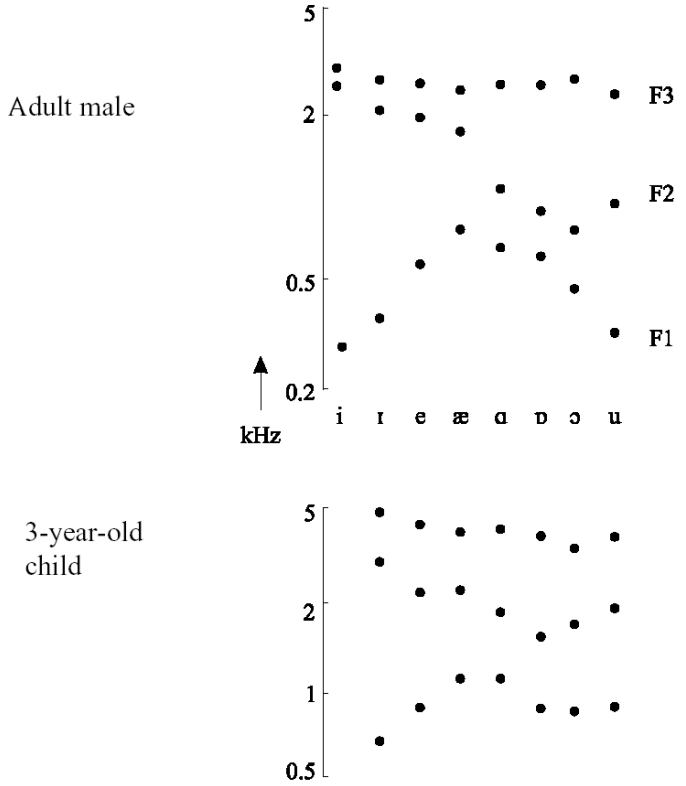
d) What are the two vowels? What are the approximate tongue positions for each? How can you tell?

e) What is this word?

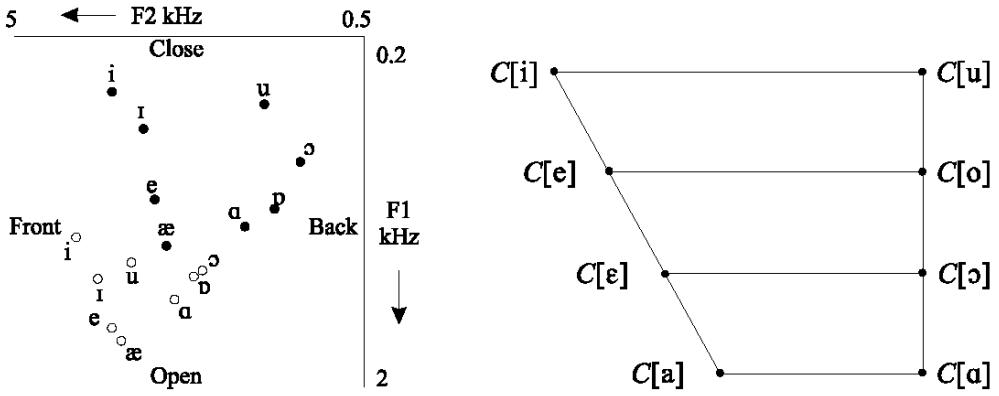

7500
0
Frequency (Hz)
0
1.10006
Time (s)

Formant Frequency Patterning in British English Vowels

Raw formant frequency data from adult males and 3-year-old children



Same data plotted on F1-F2 plane looks like vowel quadrilateral



Notice that patterning is similar for adult (closed circles) and child (open circles), but absolute frequencies are not.

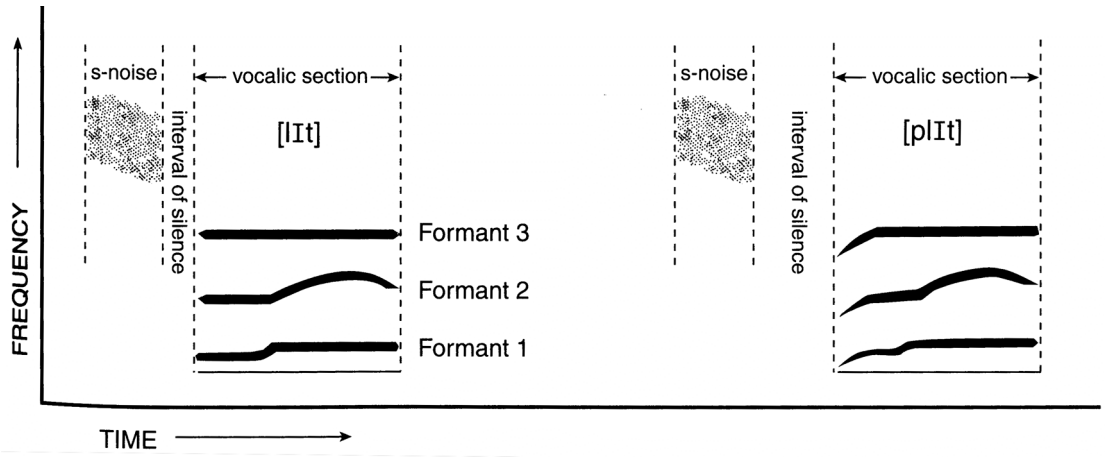
Close vowels tend to low F1
Front vowels to High F2

Sketching spectrograms

Across time, indicate main frequency regions where energy is present
Show excitation by shading -

Voiced as dark shading
Voiceless as lightly hatched

For voiced regions, show the first 3 formants

Show a frequency scale from 0 to 5000 Hz, with scale marks at 500 Hz intervals
Show a time scale with 0.1 s intervals marked.

The example below is a good model (except for the absence of scale values)