24.901 English Consonants

Using the Praat Speech Analysis system*, and the accompanying sound file, report the requested measures.

1. Measure the VOT of the initial stops in the following English words. Also measure the Fundamental Frequency (F0) at the start of the vowel following the stop release. Do you notice any pattern?

pie	buy	spy
tie	die	sty
Kai	guy	sky

2. Measure the vowel duration in the following English words. Which ones have the shortest durations? Why? Also note the directions of formant movement in the vowel (up, level, or down) as a cue to the place of articulation the coda consonant.

tap	tab	Tam
tat	tad	tan
tack	tag	tang

3. Listen to the following nine words. Clip off the initial [s] in the (a) series by dragging the cursor across the s and then deleting it using the delete command "Cut" under Edit. Listen to the result. Which items in (b) or (c) does each item in (a) most resemble? Measure the VOT of the (b) and (c) series and compare them to the (a) series. Does this help explain the similarity judgments?

a.	spill	still	skill
b.	pill	till	kill
c.	bill	dill	gill

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* some hints in using Praat for this exercise
Once you have the spectrogram from the Edit command in the basic Praat window, under the Formant drop down menu clicking Show Formants will toggle between on and off. Under Formant Settings, for a maximum, set it at 5500 Hz for a female voice and 5000 Hz for a male voice. You can play with the number of formants shown from 3 to 5 to see what kind of screen resolution you get. For the VOT measure you must try to find the burst; for labials this may be weak. Listen to the signal as you try to decide where to take your measure. For F0 (fundamental freq) look under the Pitch menu. Show Pitch toggles back and forth with a blue line on the spectrogram. For the settings use 70 Hz for minimum and 200 Hz for a maximum for a male voice. You can simply click on the first blue dot in the vowel and a pitch measure in Hz (e.g. 111Hz) will appear on the right margin of the screen. You can use command x to delete, command c to copy and command v to paste. For the last exercise where you are asked to delete the s, it might be advisable to copy and paste the *spill*, *still*, *skill* somewhere at the end of the entire wave first before doing the deletions.

24.901 Language and Its Structure I: Phonology
Fall 2010