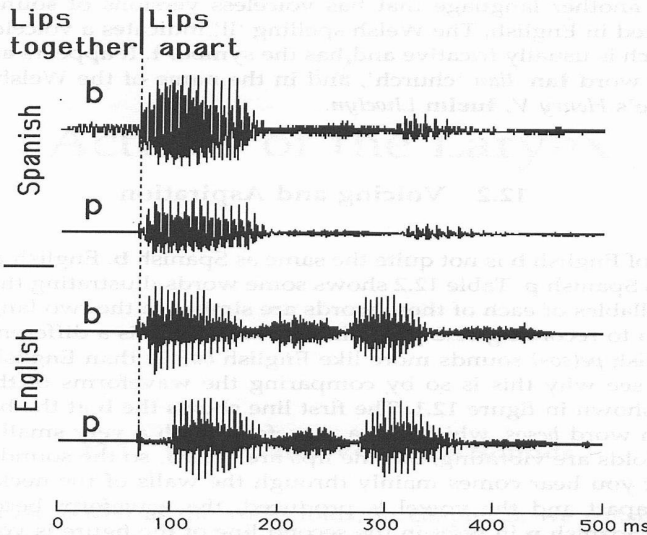


(6) VOT in Spanish and English

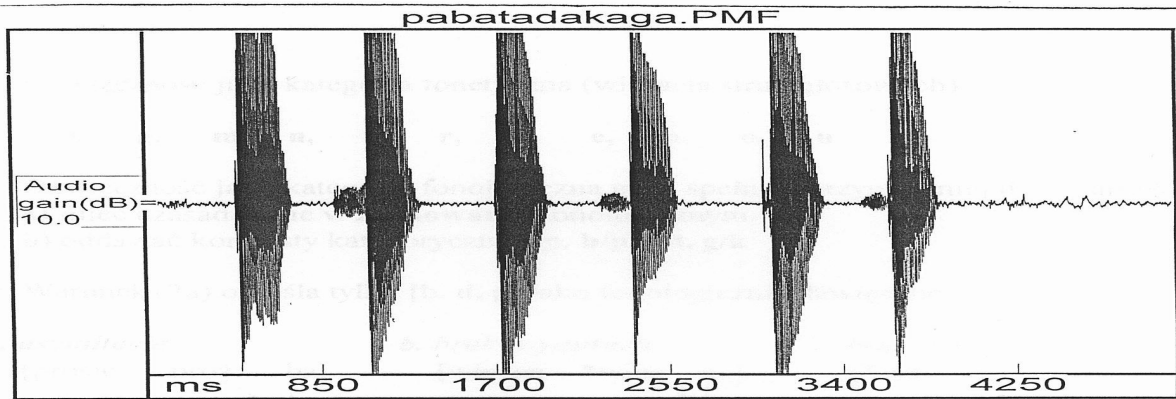


Acoustic cues to 'voiced / voiceless' or better: *lenis / fortis* in English:

- 1) duration of preceding vowel
- 2) duration of closure
- 3) burst amplitude / noise amplitude
- 4) VOT lag (asp)
- 5)... voice bar

Figure 12.1 Waveforms of the Spanish words *besos* 'kisses', *pesos* 'pesos' (money), and the English words *bases*, *paces*.

(7) Polish = Spanish (long VOT lead)



(8) Place cues in formant transitions (transitions in signal are good!)

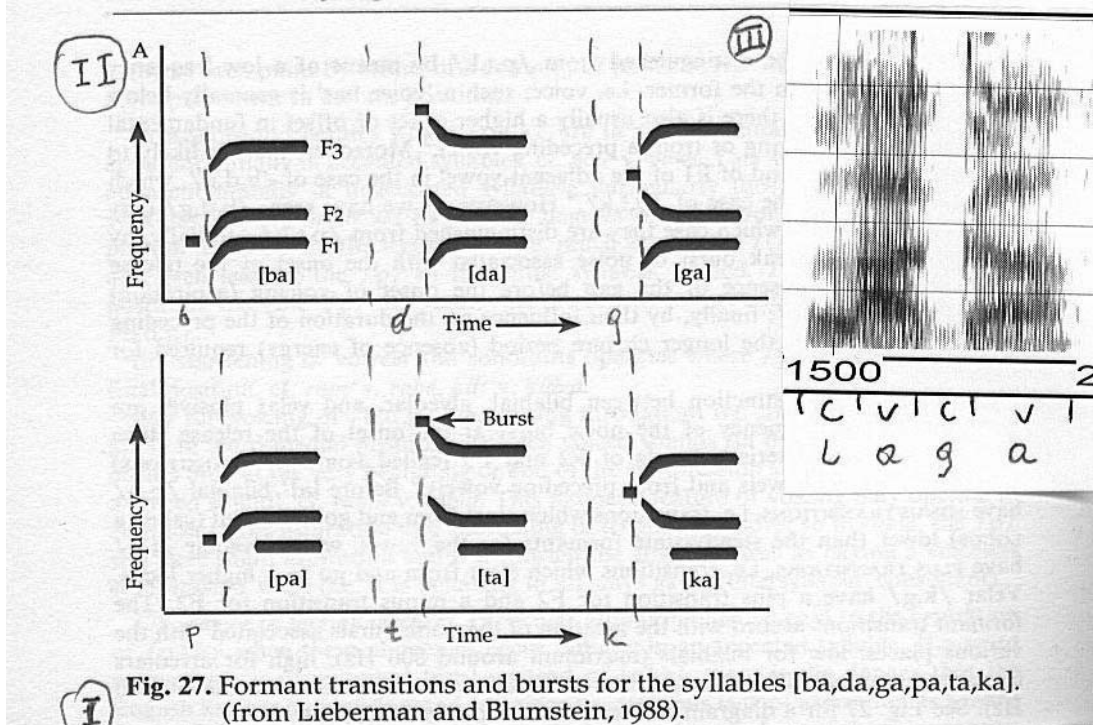


Fig. 27. Formant transitions and bursts for the syllables [ba,da,ga,pa,ta,ka]. (from Lieberman and Blumstein, 1988).