

Ahots bidea

FIGURE 3.1
The vocal tract.

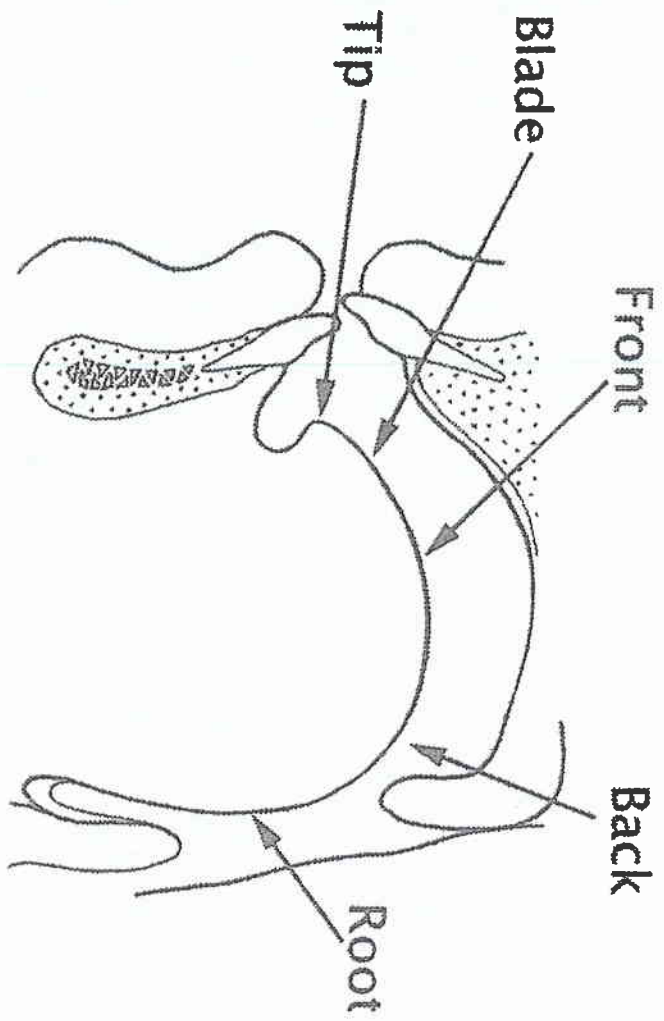
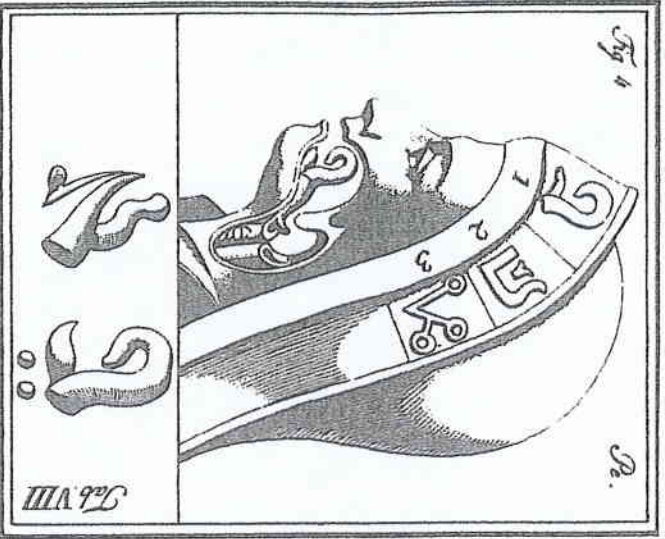
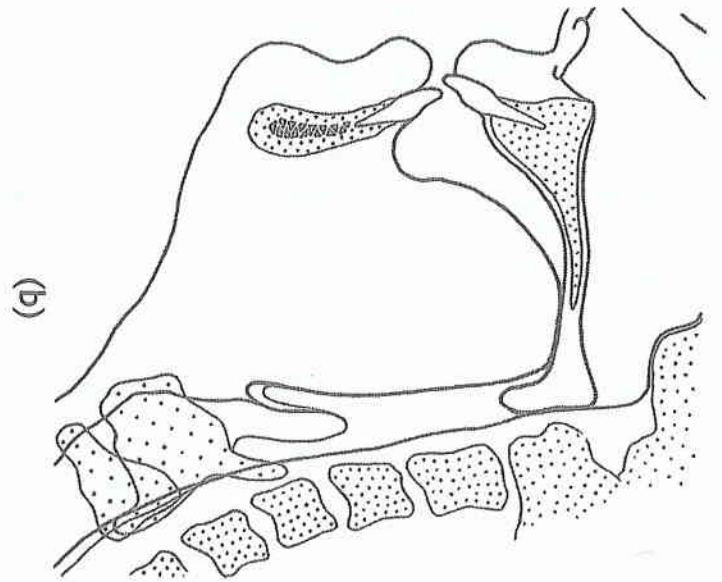
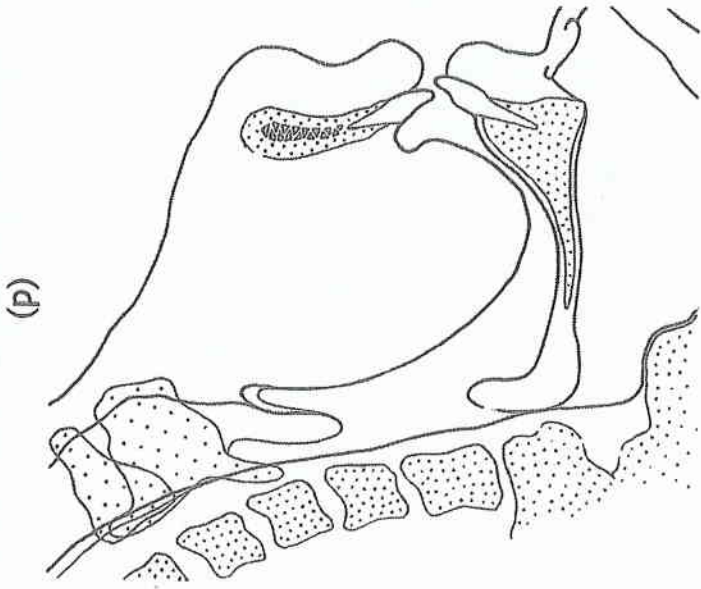
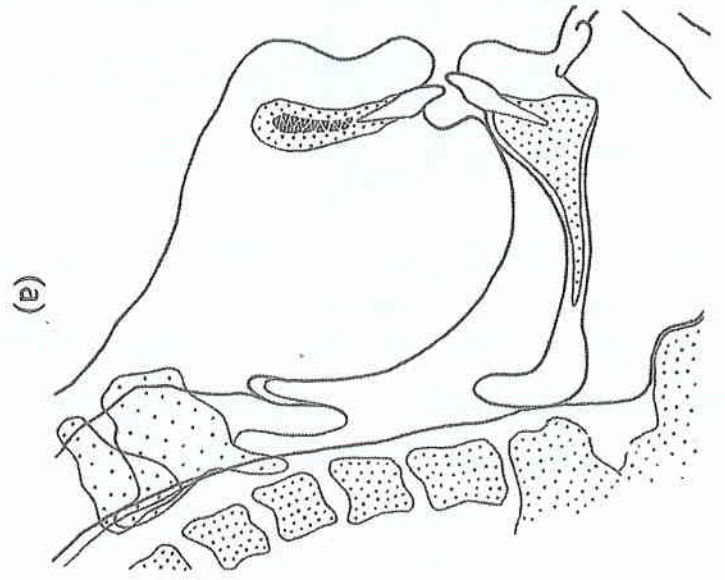
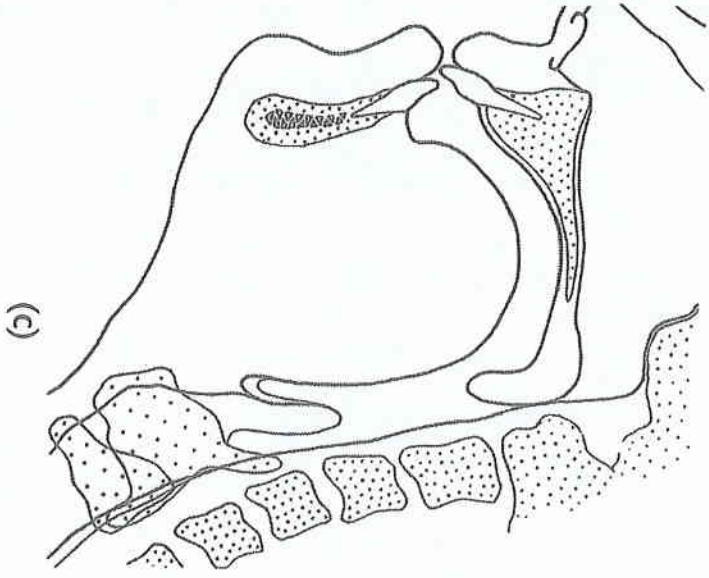
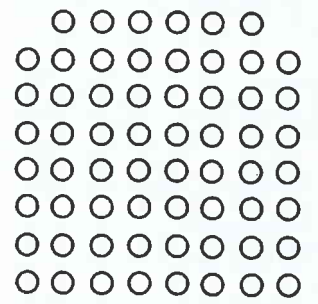


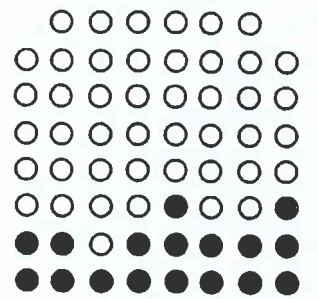
FIGURE 3.2
Areas of the tongue.



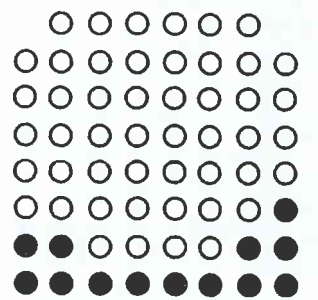




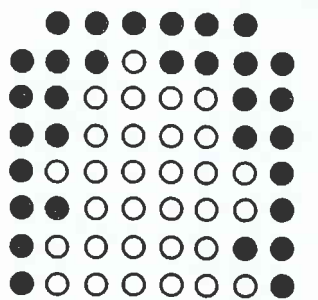
A



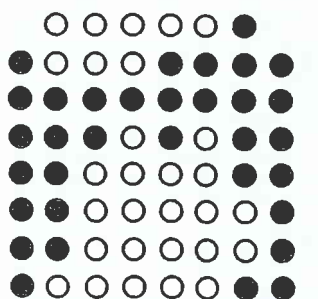
B



C



D



E

FIGURE 3.4



Place of articulation

FIGURE 4.1
Simple tube and piston
model of the vocal tract.

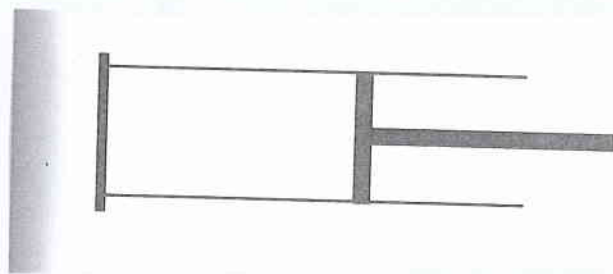
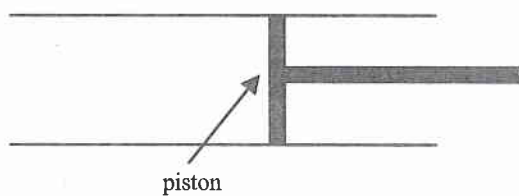


FIGURE 4.2
A blocked tube

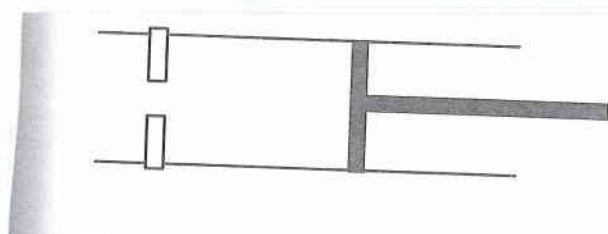


FIGURE 4.3
A constricted tub

FIGURE 4.5
Phases of plosive
production.

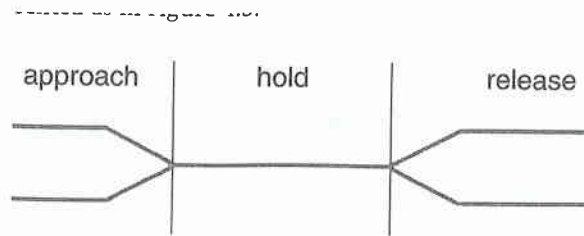
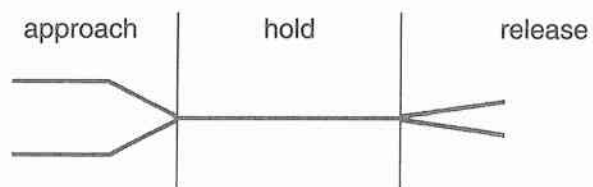
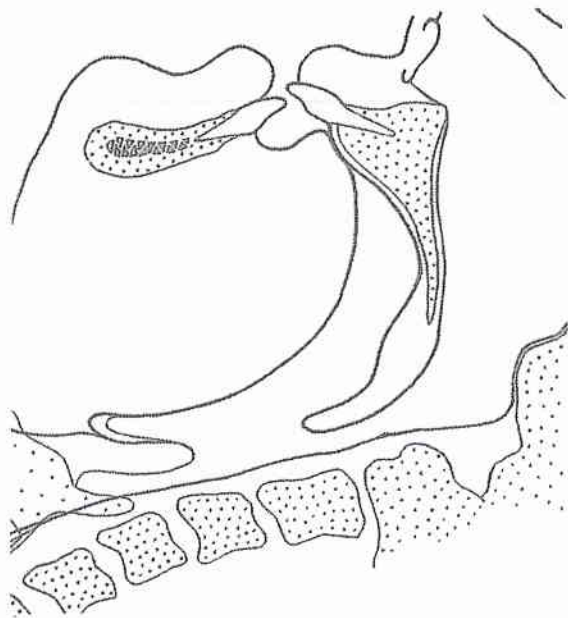
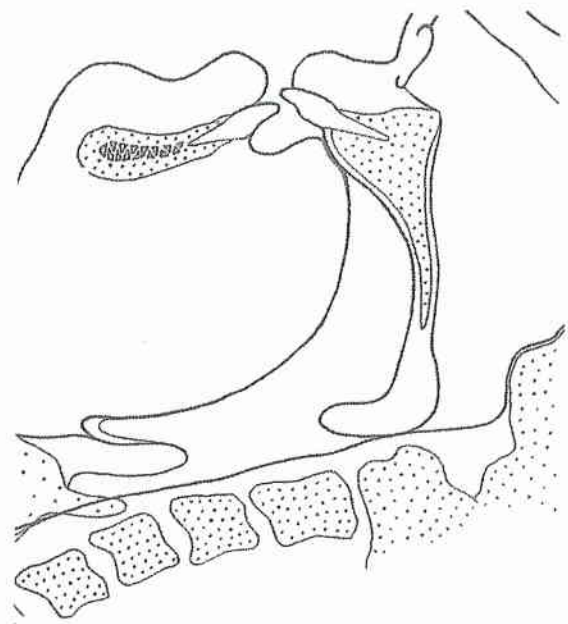
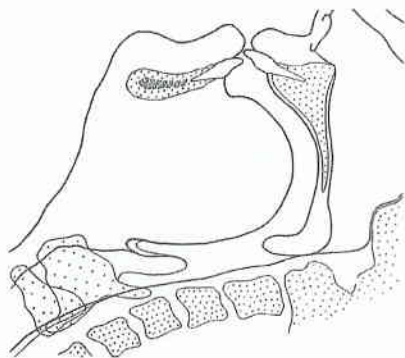


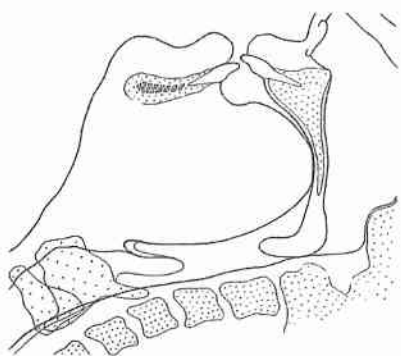
FIGURE 4.6
Phases of affricate
production.



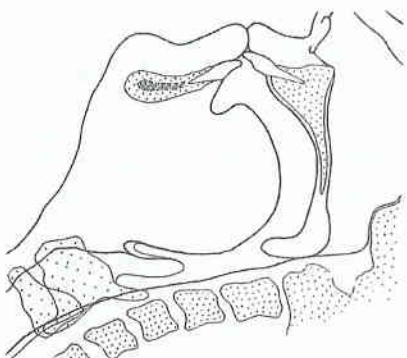




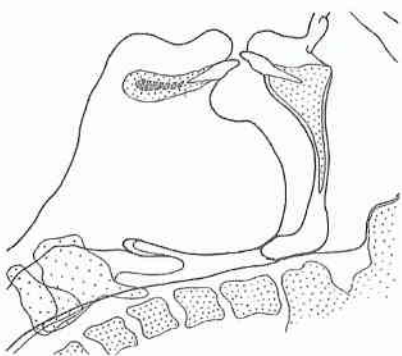
(a)



(b)

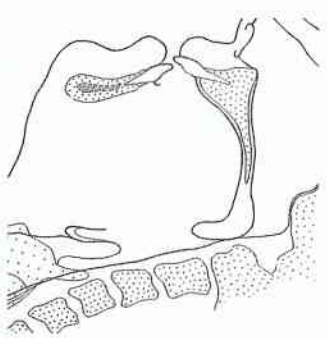
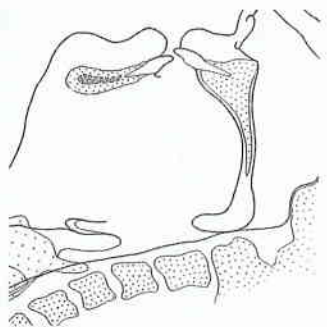
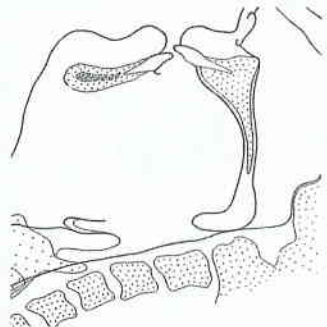


(c)



(d)

Figure for Exercise 3.5

**Further reading**

An excellent account of place of articulation with many examples from languages around the world is found in chapter 2 of Peter Ladefoged and Ian Maddieson, *The sounds of the world's language* (Blackwell, 1996). Another very detailed account you might like to look at is chapter 8 of J. C. Catford, *Fundamental problems in phonetics*, Edinburgh: Edinburgh University Press, 1977. There is a survey of sound systems of over 300 languages in Ian Maddieson, *Patterns of sounds*, Cambridge: Cambridge University Press, 1984.

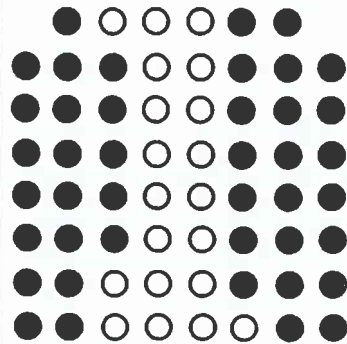


FIGURE 4.7
Palatogram of [s].

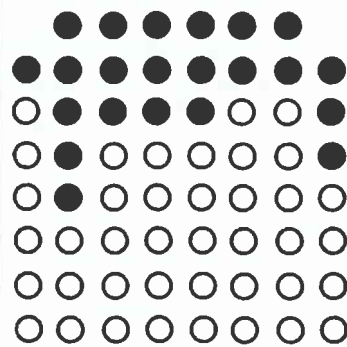


FIGURE 4.8
Palatogram of [d].

Table 4.2. Median fricative consonants of the IPA.

bilabial	ϕ β	palatal	ç ʝ
labiodental	f v	velar	x ɣ
dental	θ ð	uvular	χ ʁ
alveolar	s z	pharyngeal	ħ ʕ
postalveolar	ʃ ʒ	glottal	h ɦ
retroflex	ʂ ʐ		

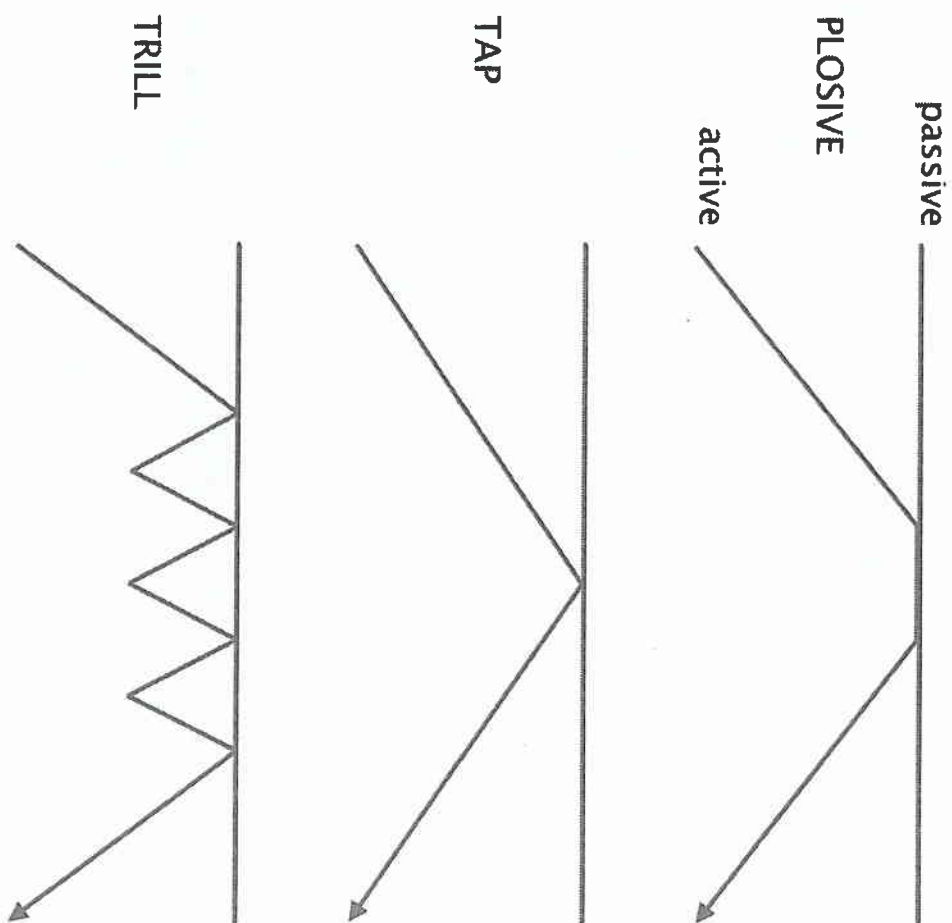


FIGURE 4.11

Timing comparison of plosives, taps and trills.