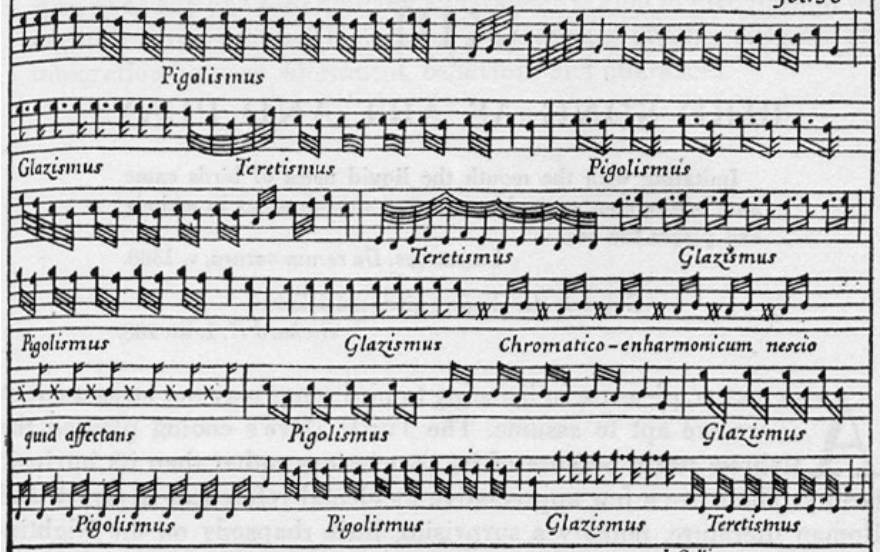
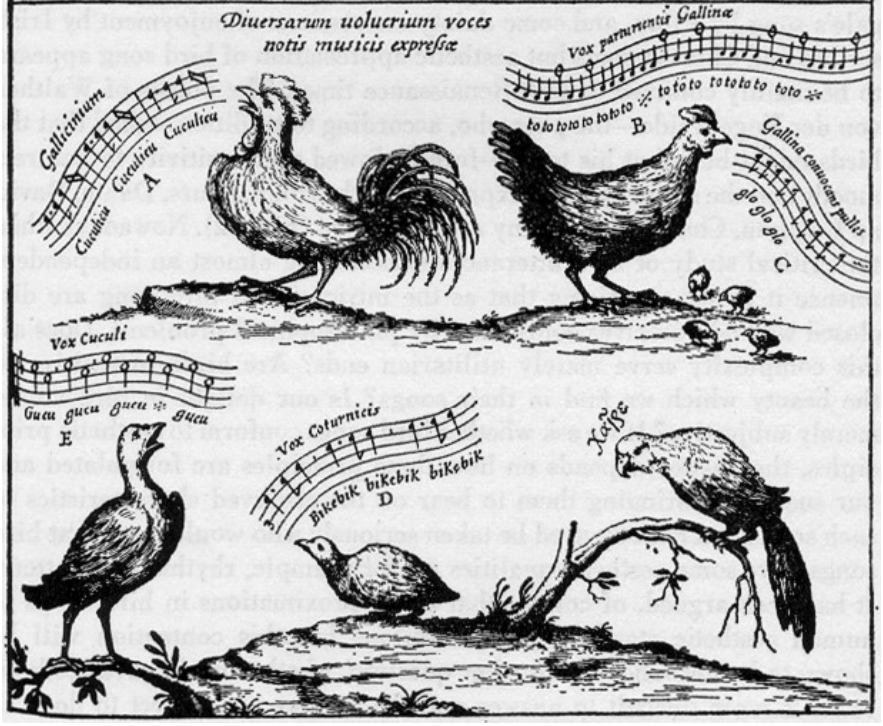
Apprendimento del canto negli uccelli

ZEBRA FINCH (*Taeniopygia guttata*)

Glottismi modulationum sibilo exprimendi in Luscinia obseruati



Diuersarum uolucrium voces notis musicis expressæ



Capacita’ di apprendimento vocale

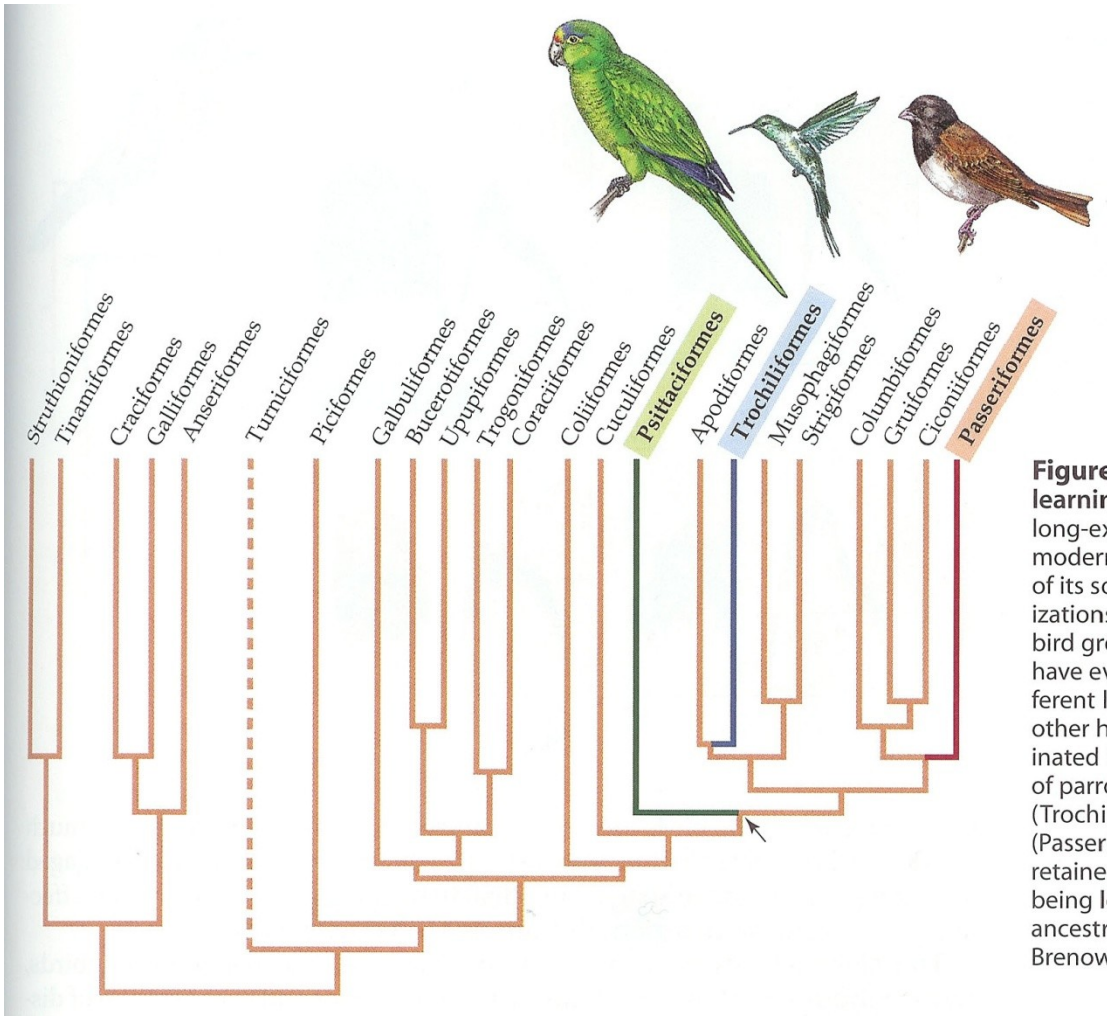
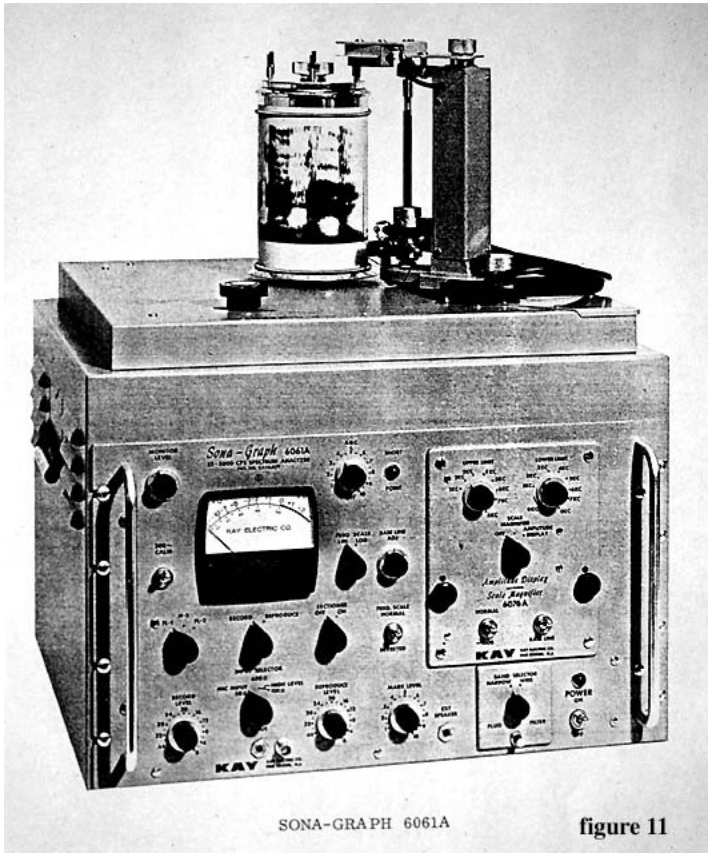


Figure 2.14 The phylogeny of song learning in birds. If we assume that the long-extinct bird that gave rise to all modern species did not learn elements of its songs, but instead produced vocalizations instinctively, as do many modern bird groups, then song learning must have evolved independently in three different lineages of modern birds. On the other hand, song learning may have originated in a common ancestor (see arrow) of parrots (Psittaciformes), hummingbirds (Trochiliformes), and passerine songbirds (Passeriformes), and may have been retained in these three lineages while being lost in other descendants of that ancestral song-learning species. After Brenowitz [142].

Vecchi metodi per studiare il canto

FIGURE 3. *Songs of 1M and 4M.*

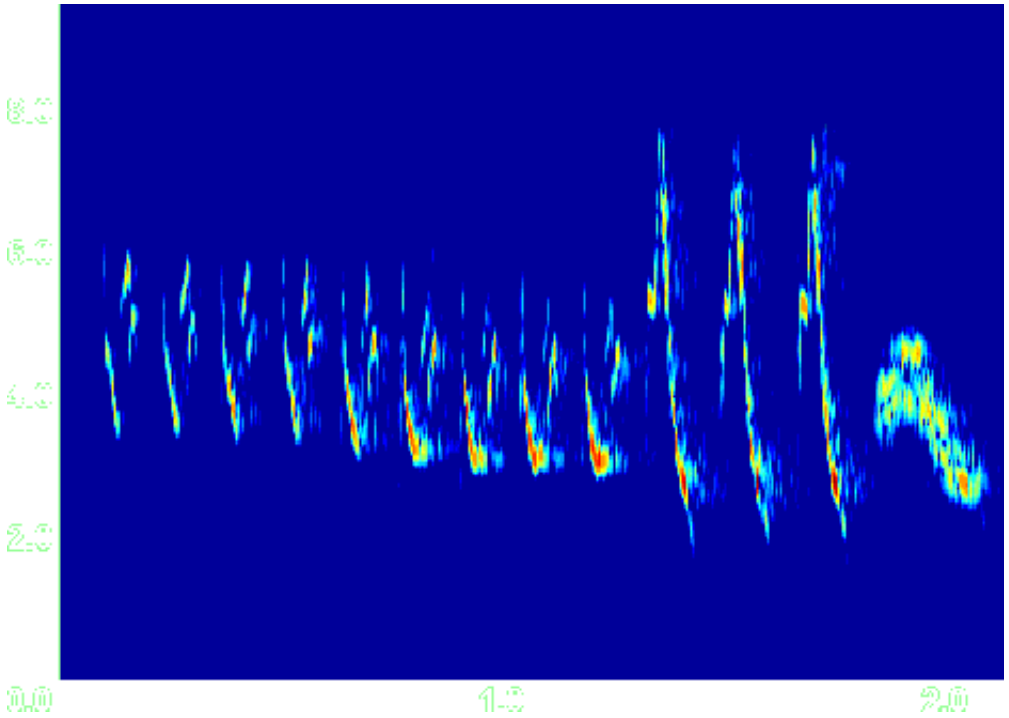
Magnetofono e sonografo



SONA-GRAPH 6061A figure 11

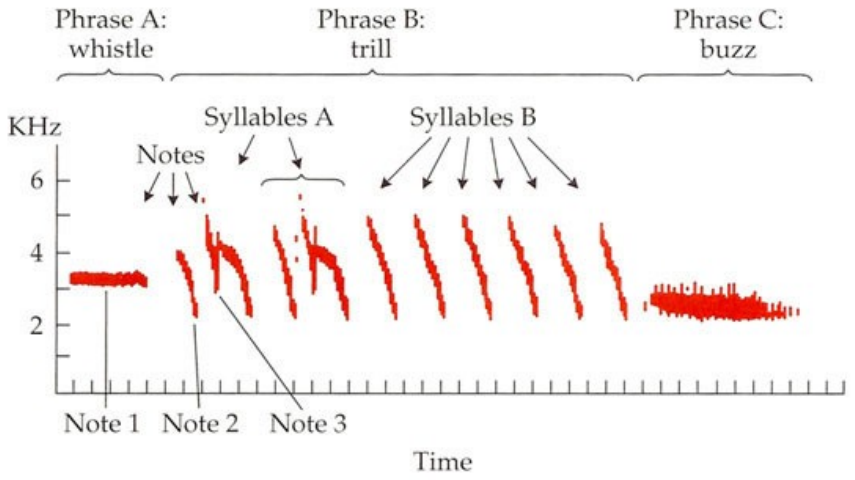
Il canto di un fringuello

Il canto di un fringuello

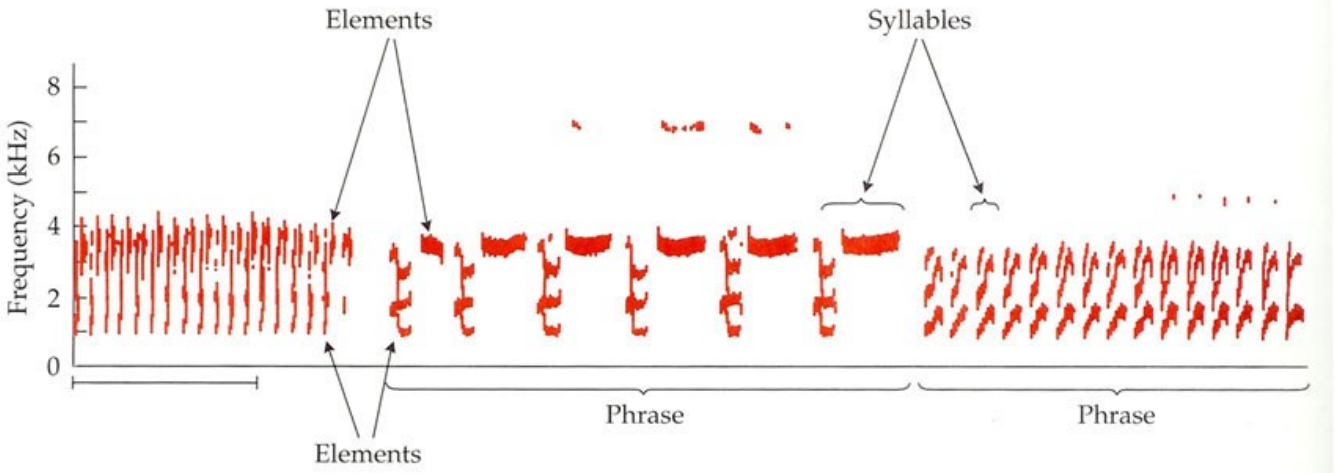


Analisi del canto

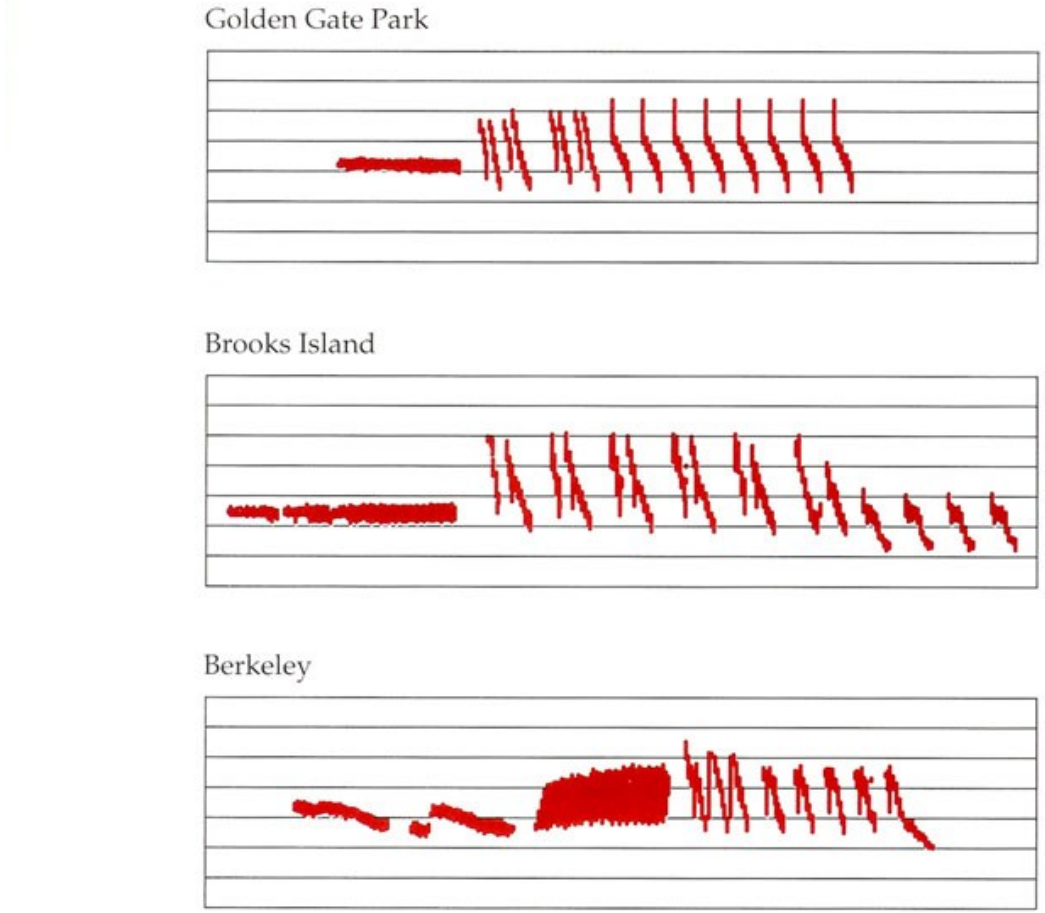
(A) White-crowned sparrow



(B) Canary

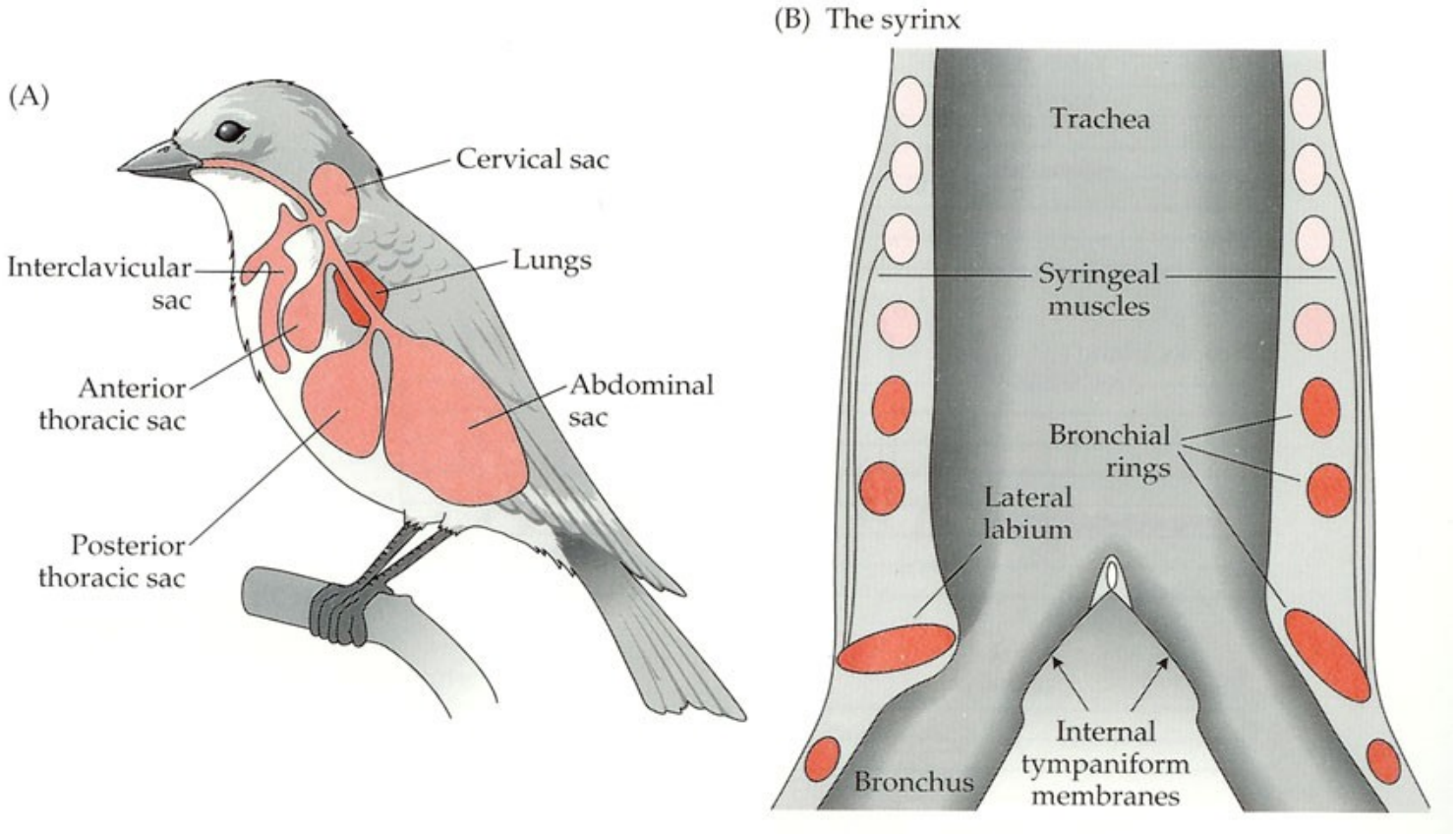


I dialetti nel passero capobianco

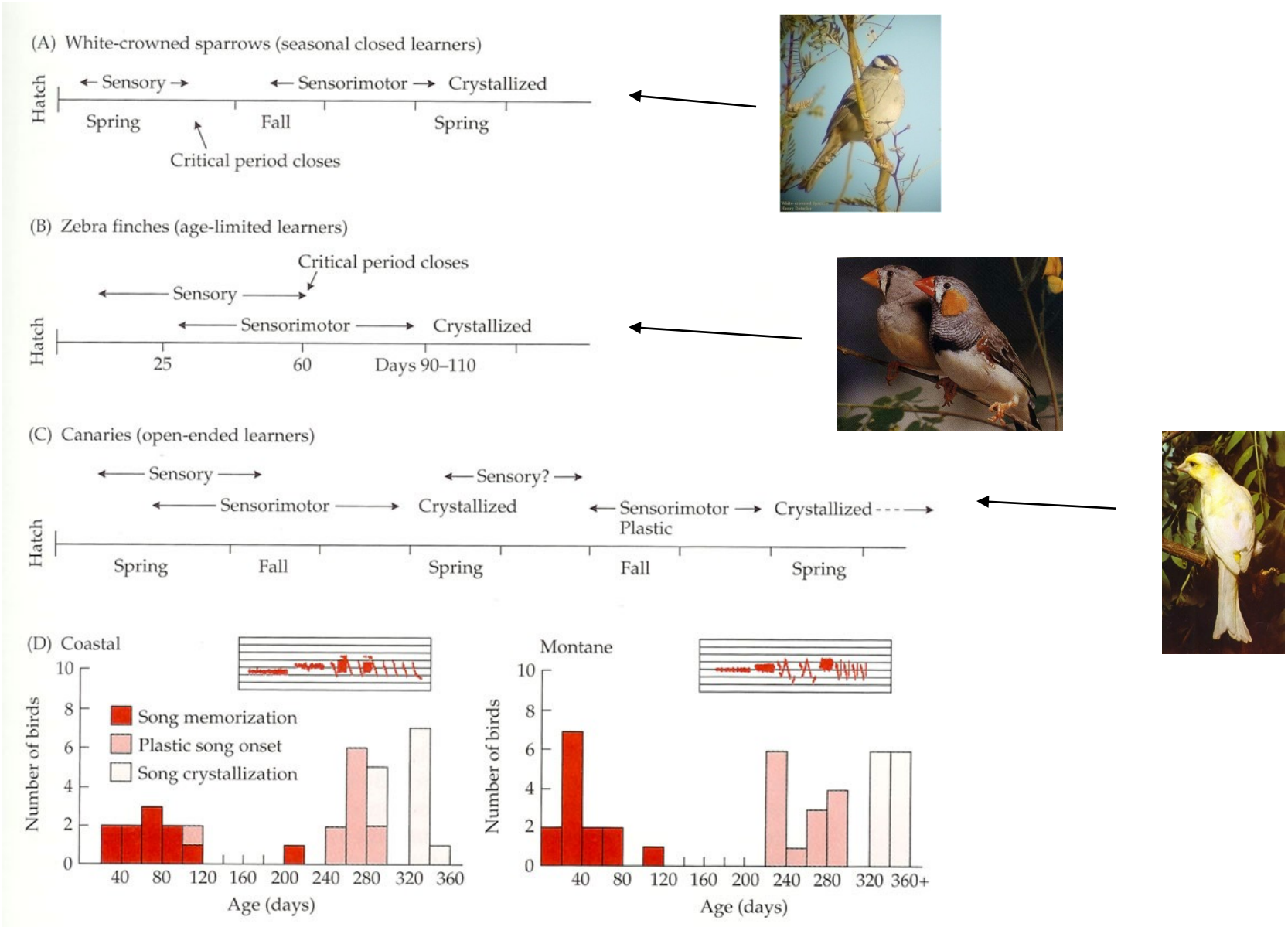


8.2 Dialects of the white-crowned sparrow
White-crowned sparrows from different regions of the San Francisco Bay Area sing songs with distinct dialects. Courtesy of Peter Marler.

La siringe, organo fonatorio degli uccelli



Periodi sensibili per l'apprendimento



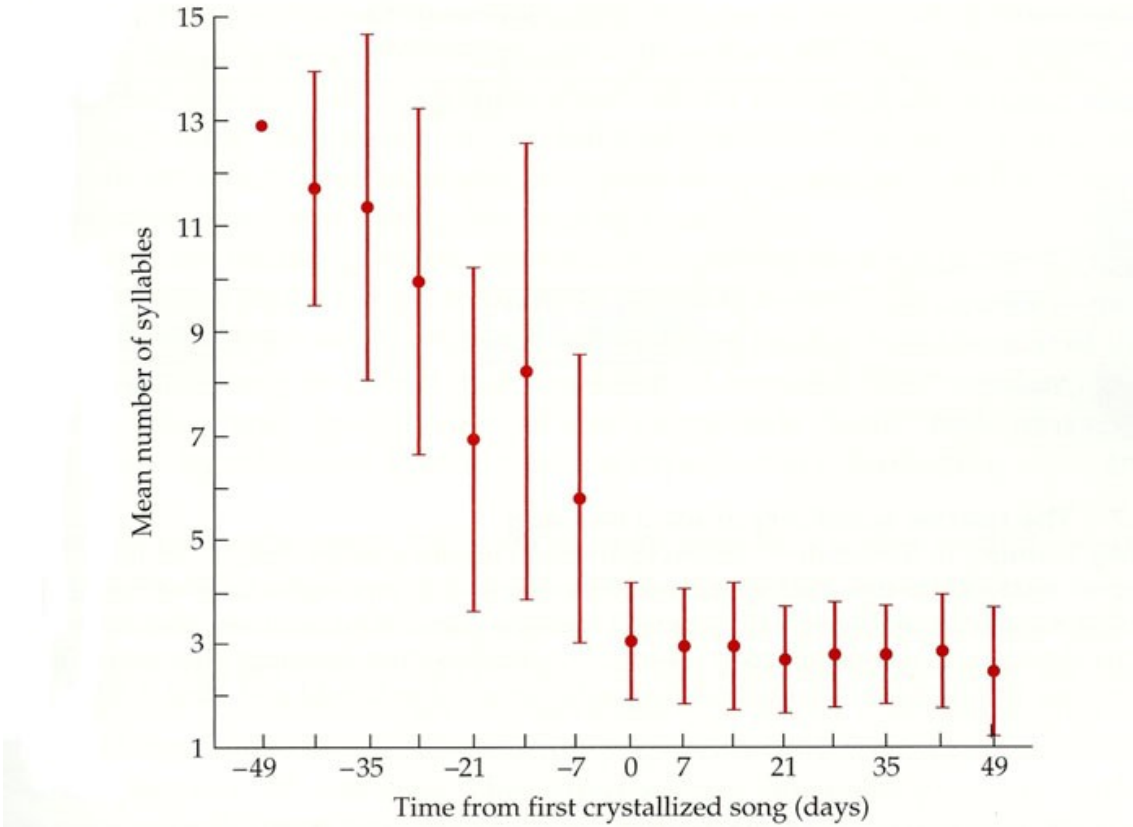
Improvvisazione

Model 1

Composite copy of 1 & 2

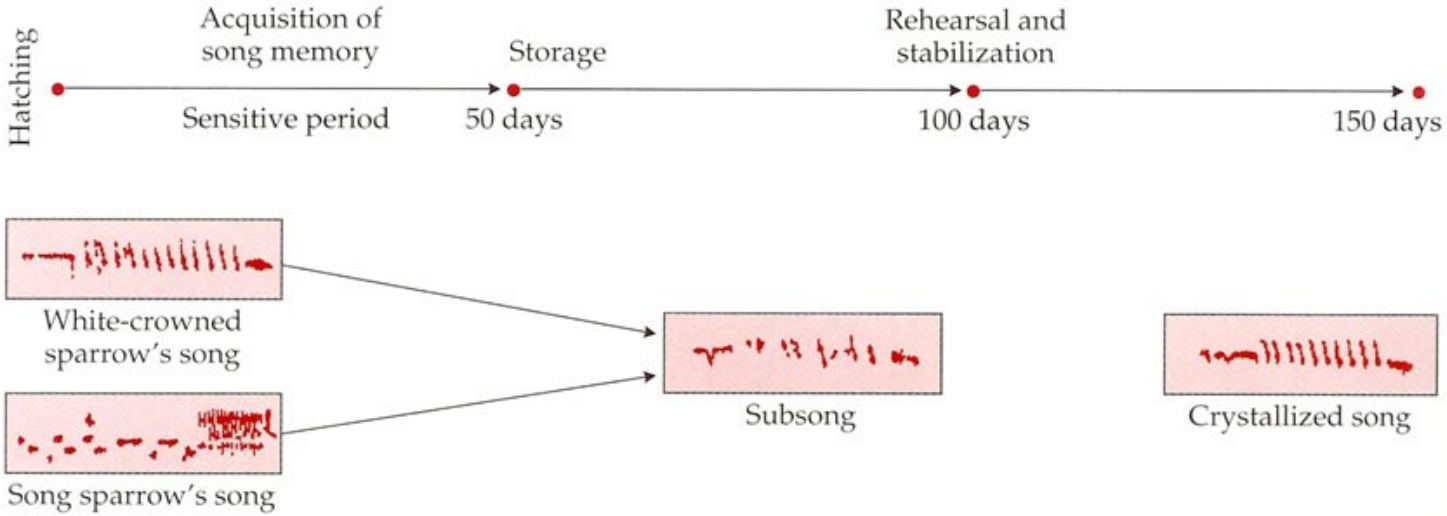
Model 2

Riduzione del repertorio sillabico



8.6 Changes in syllable repertoire from plastic song to crystallized song
During the plastic song phase, swamp sparrows exhibit an overproduction of syllables, which are dramatically reduced during the crystallization process. After Marler and Peters 1982.

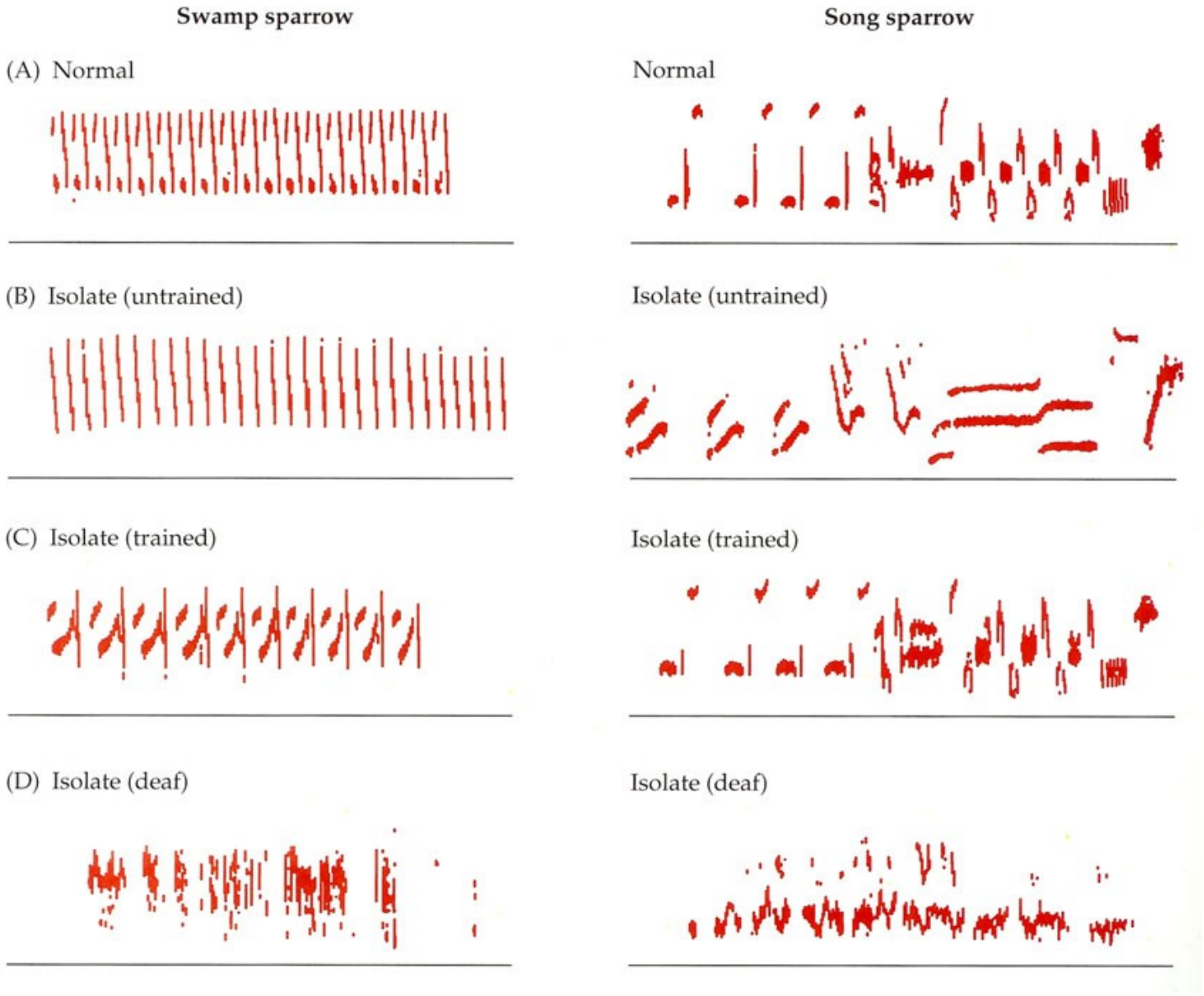
Predisposizione specie-specifica alll'apprendimento



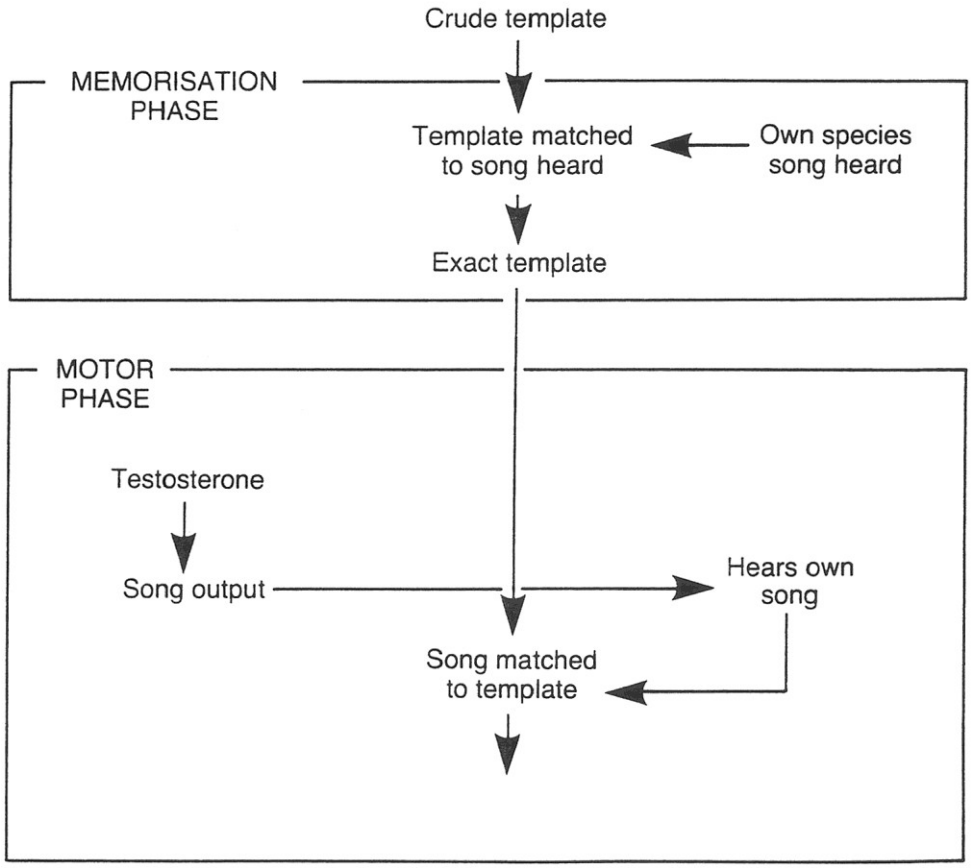
8.7 The species specificity of song learning

Song learning in the white-crowned sparrow is highly species specific. In this experiment, white-crowned sparrows were exposed to tape recordings of two different songs during the sensitive period for song memorization: their own species-typical song and a song sparrow's song. Despite this dual tutoring, after crystallization they produce their own species-specific song. After Gould and Marler 1987.

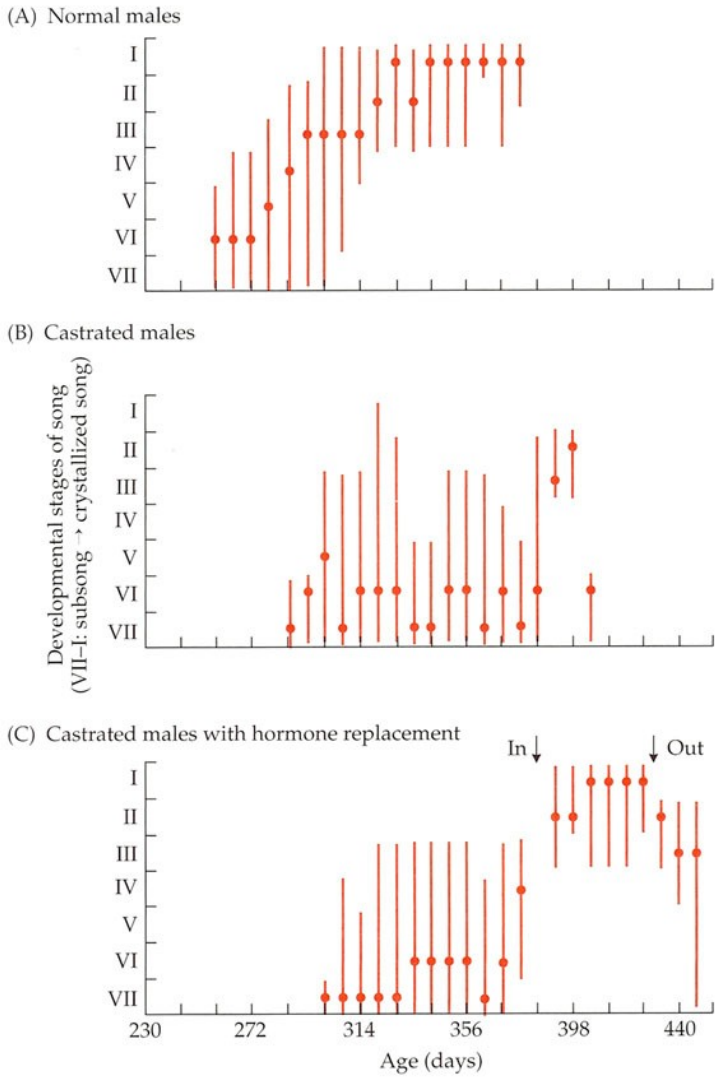
Necessita’ di un modello da imitare



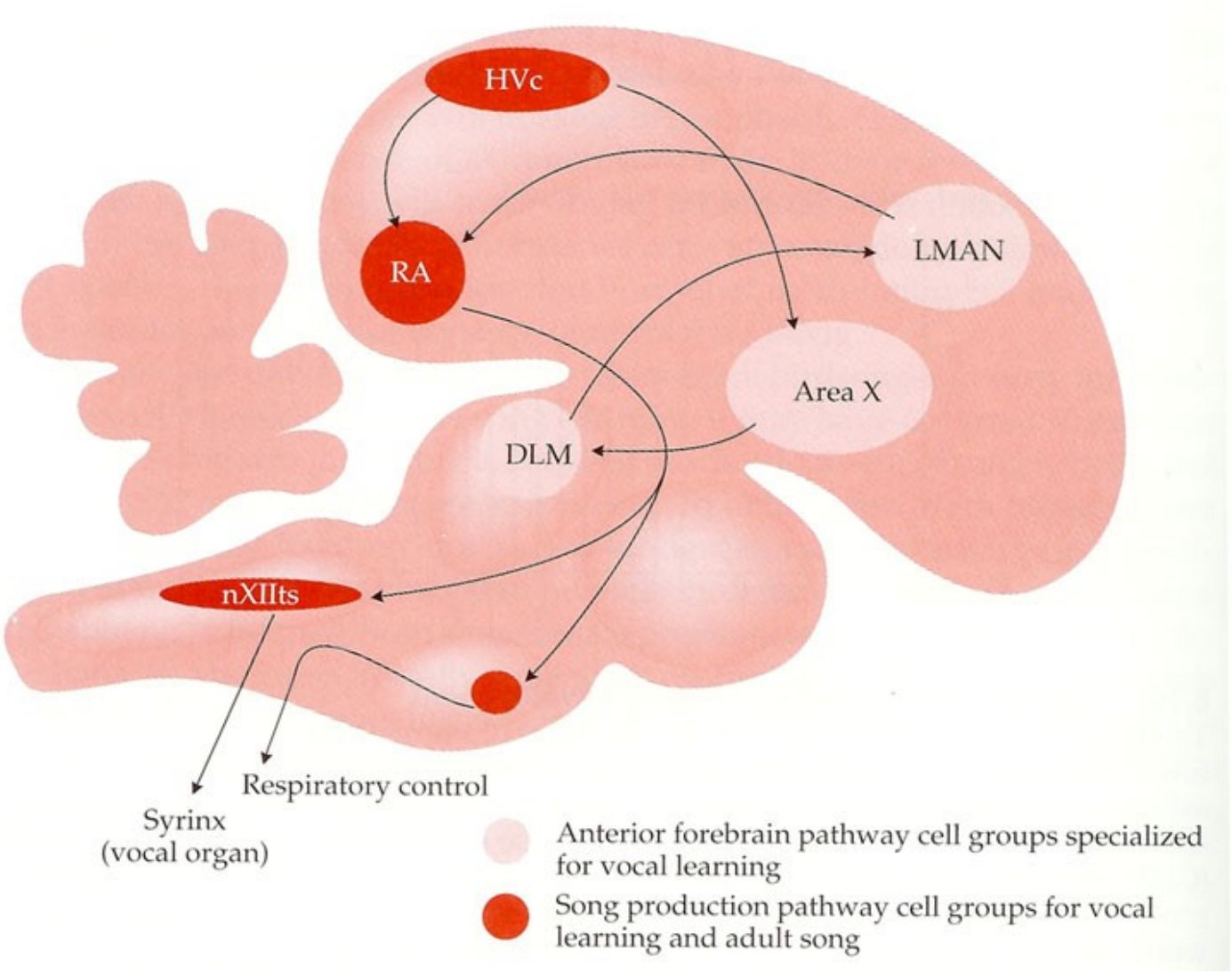
Lo schema di Konishi per l'apprendimento



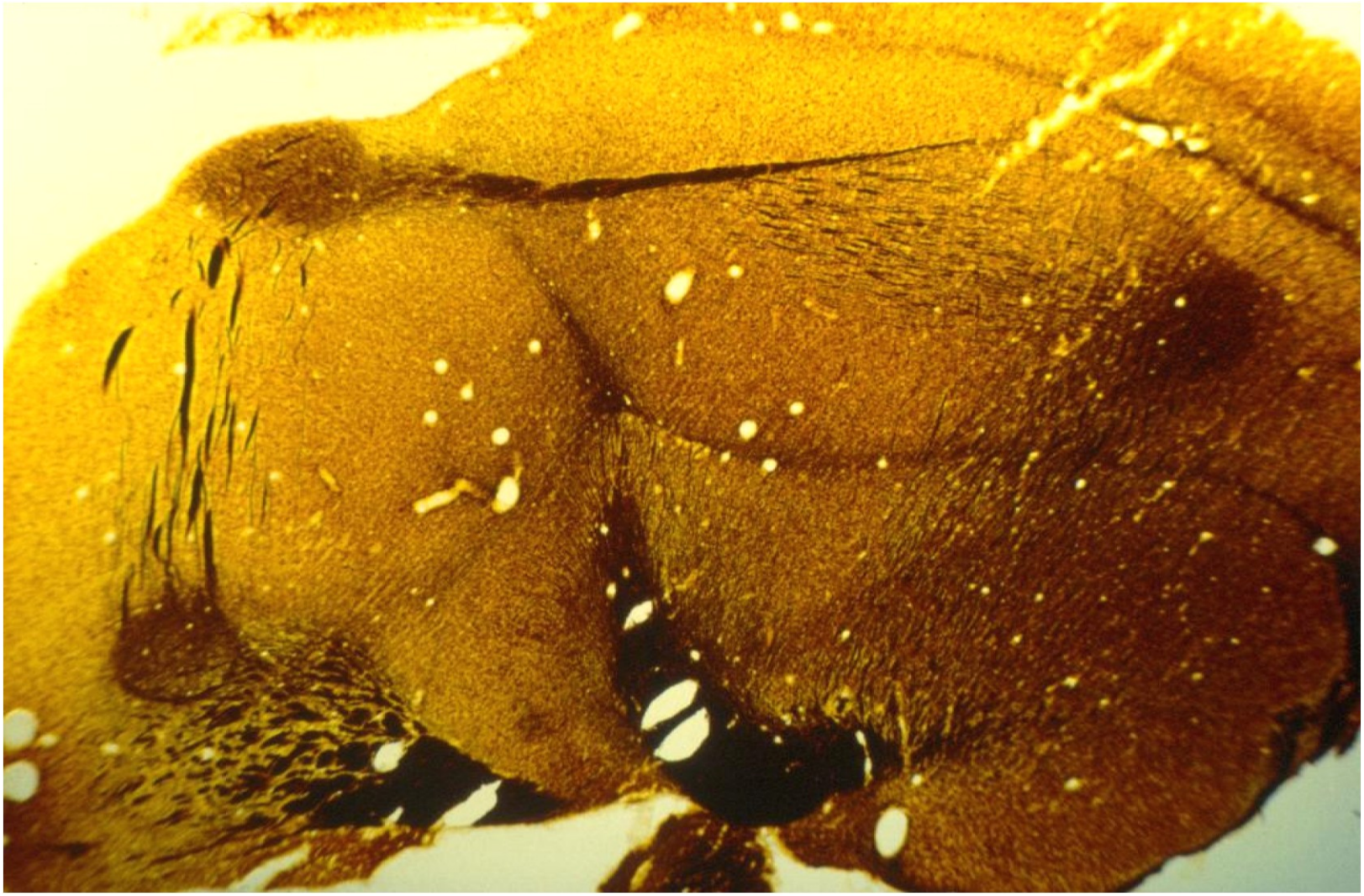
Influenza del testosterone sullo sviluppo del canto



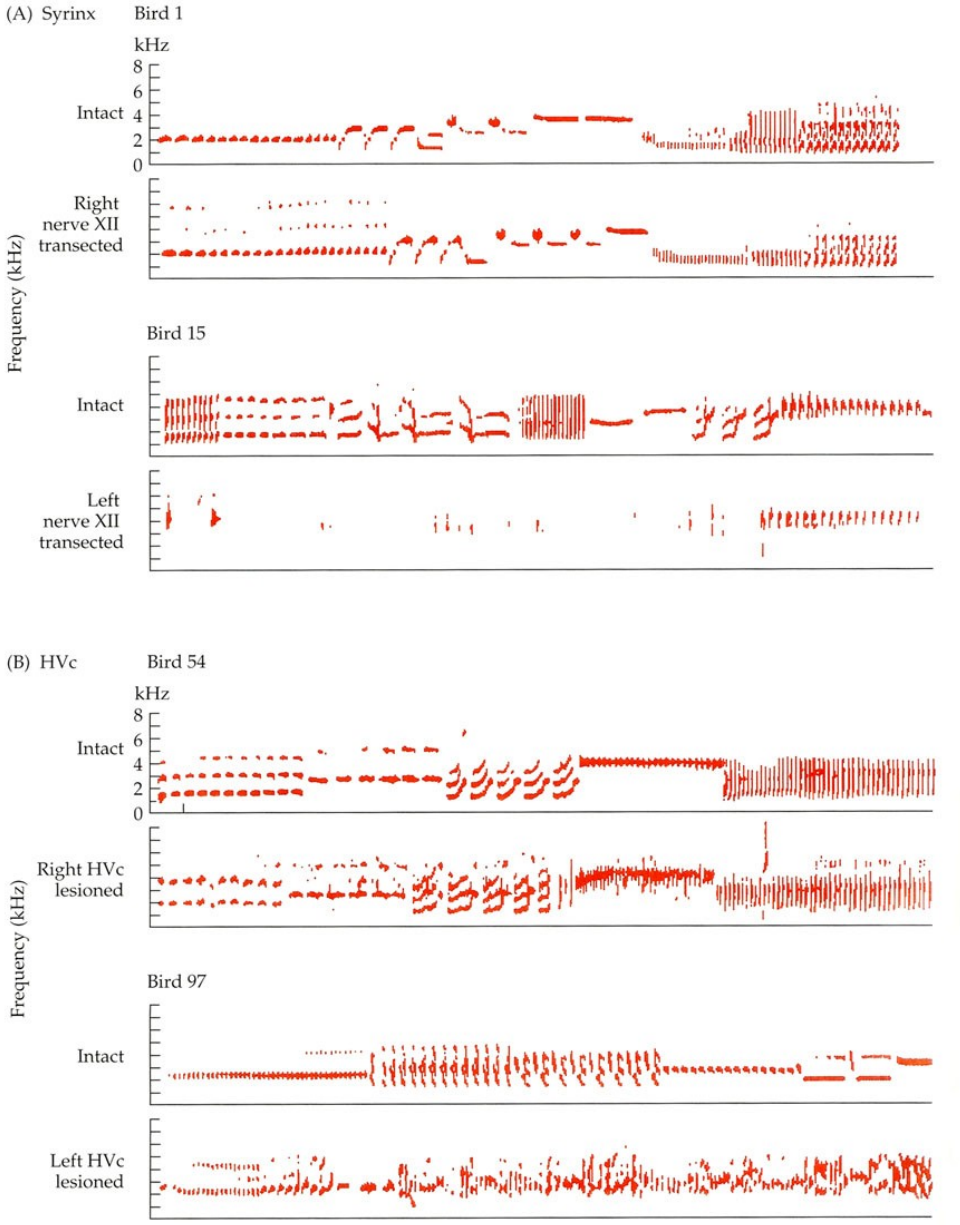
Il sistema neurale del canto



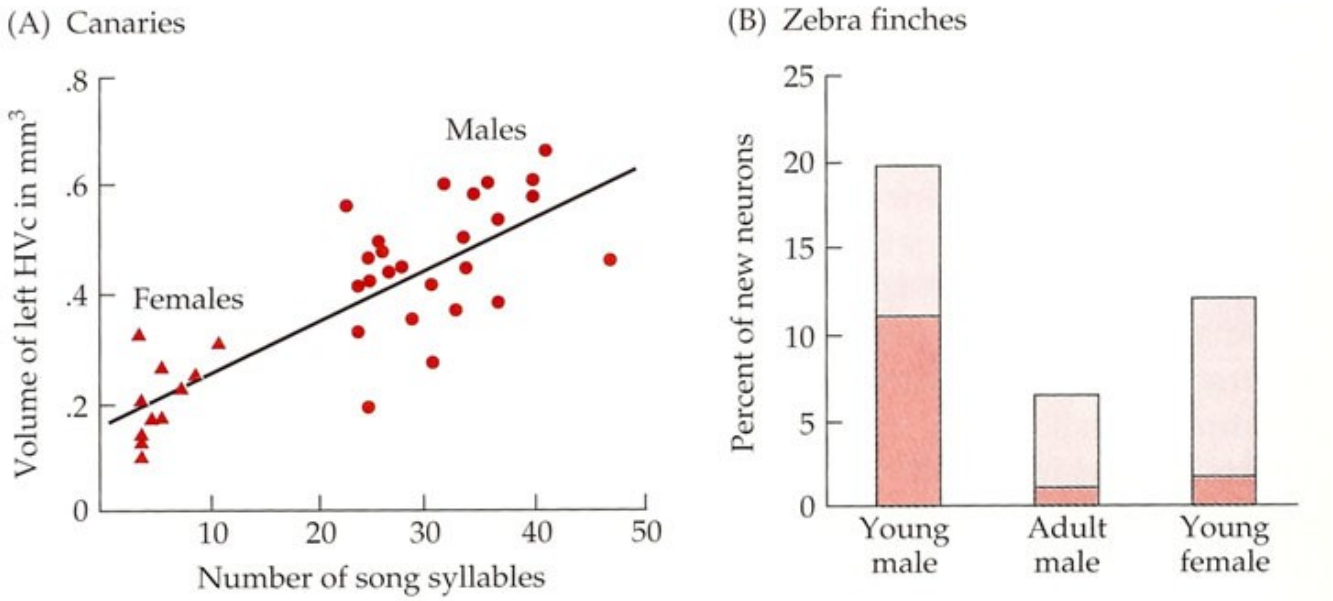
Il sistema neurale del canto



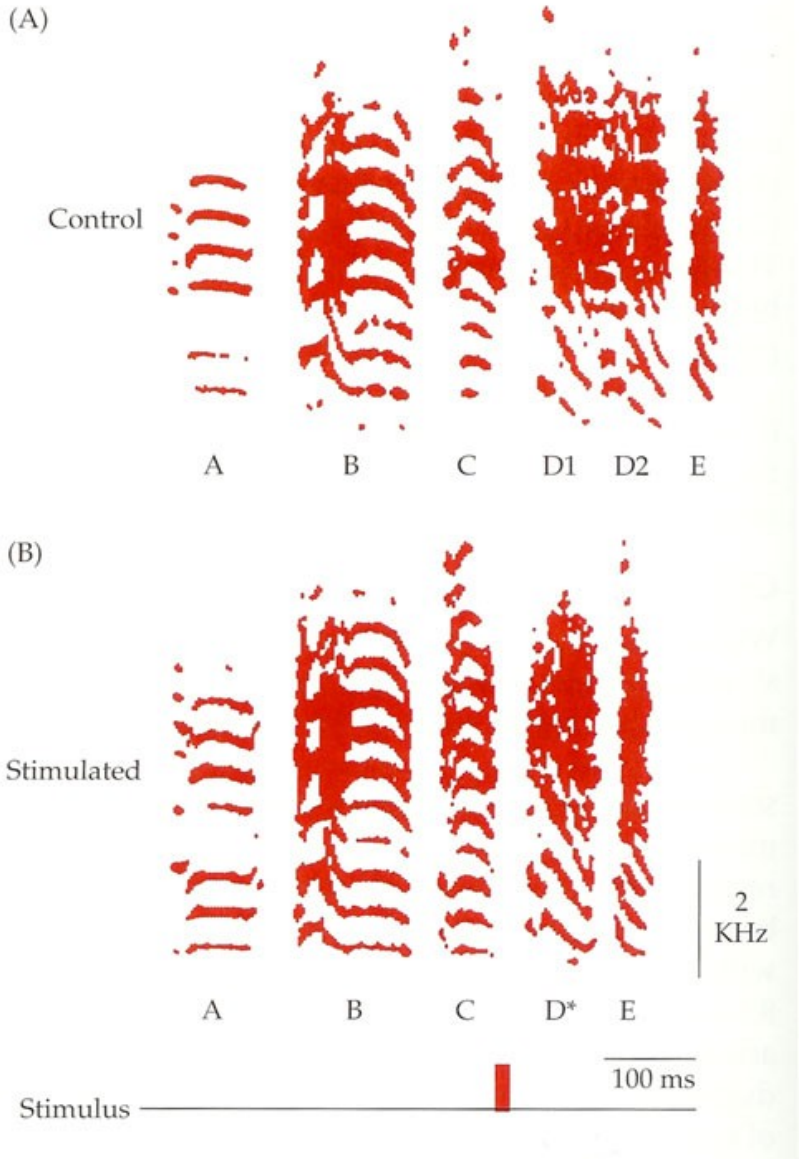
Lateralizzazione del controllo del canto



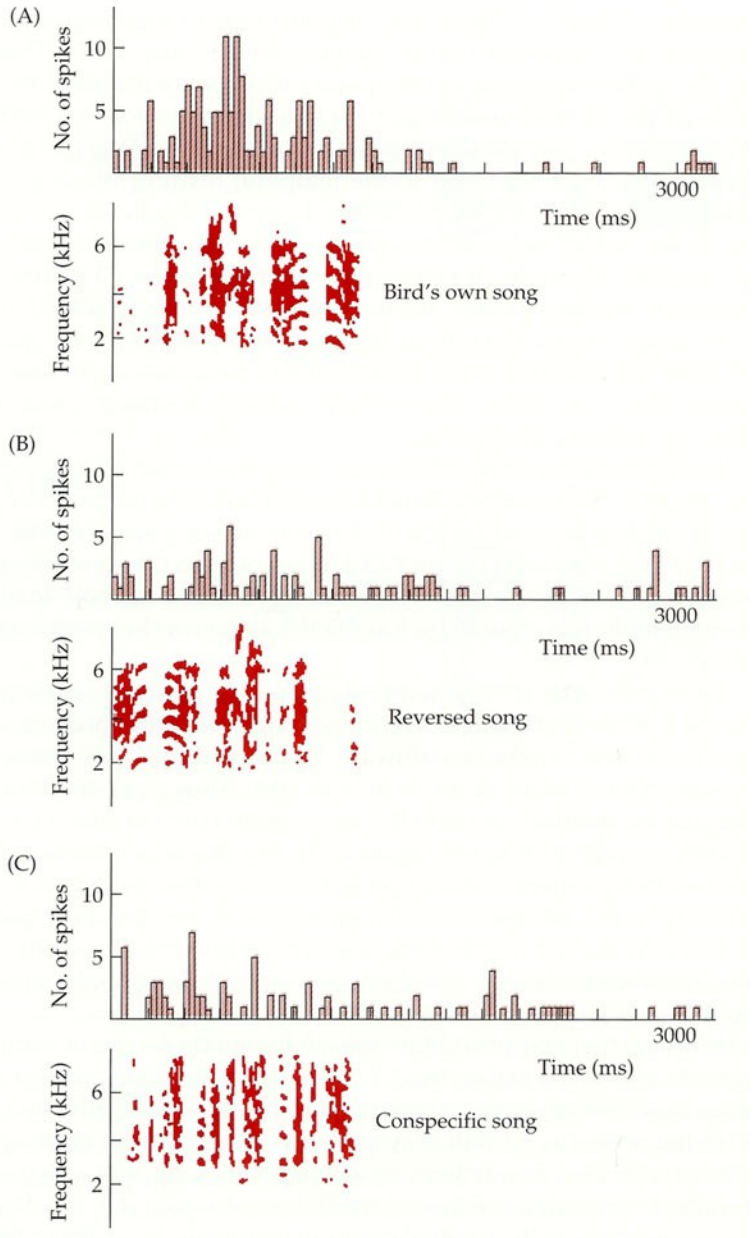
“Brain space for learning”



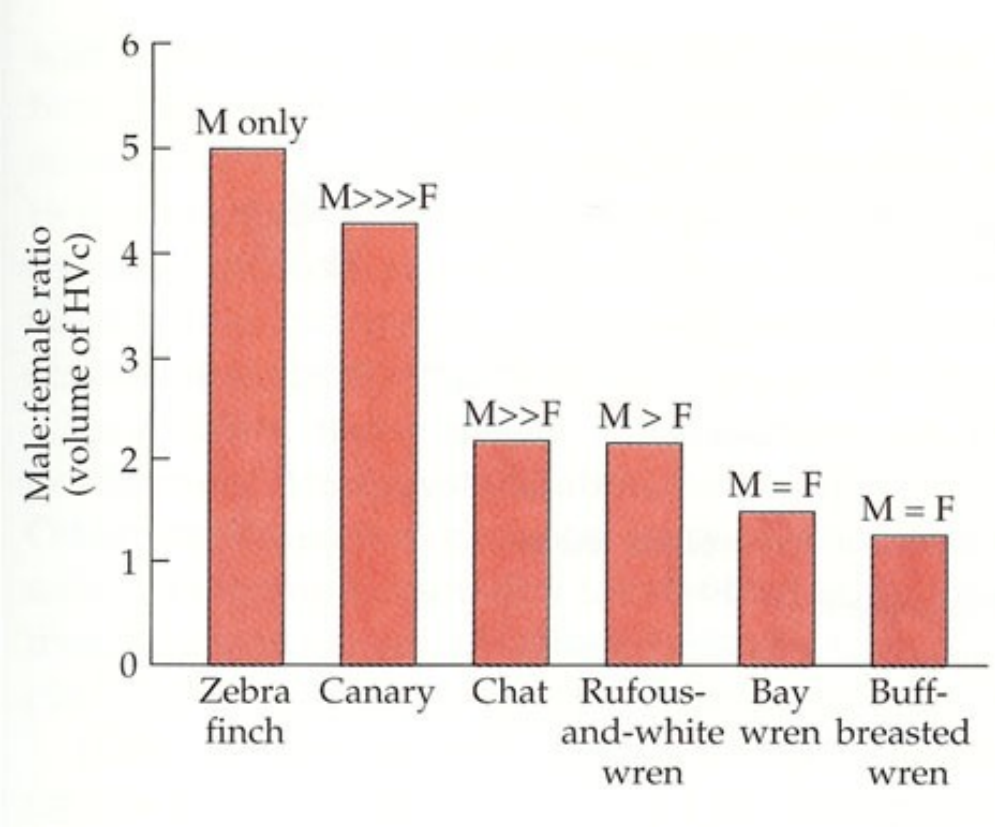
Il controllo gerarchico di HVC



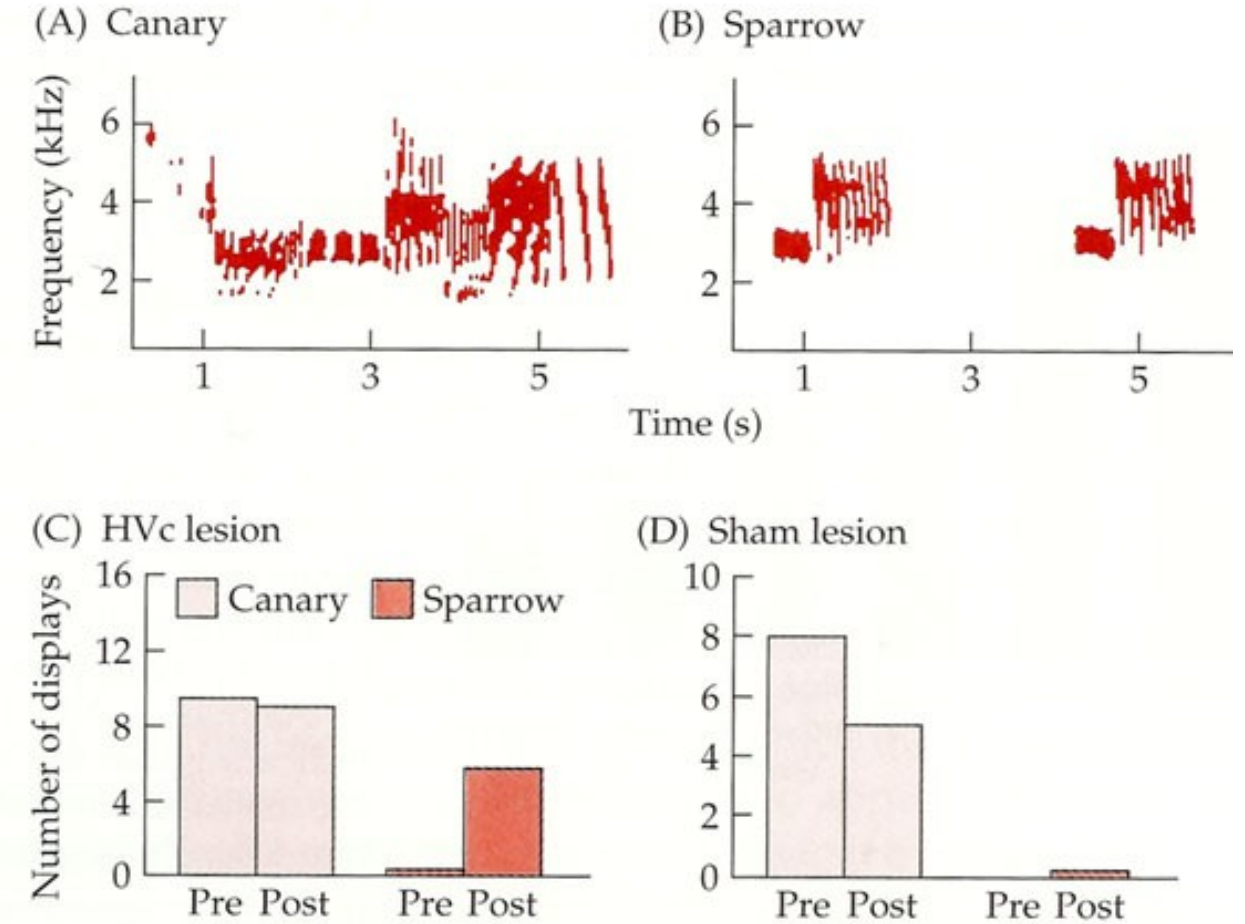
La riposta preferenziale al proprio canto



Il dimorfismo sessuale del sistema neurale del canto



HVC controlla la risposta al canto conspecifico



1) Quali aspetti sono comuni al canto degli uccelli e al linguaggio umano?

2) Perche’ e’ importante il feedback auditivo nell’apprendimento vocale?

3) Come si dimostra se un comportamento e’ lateralizzato?