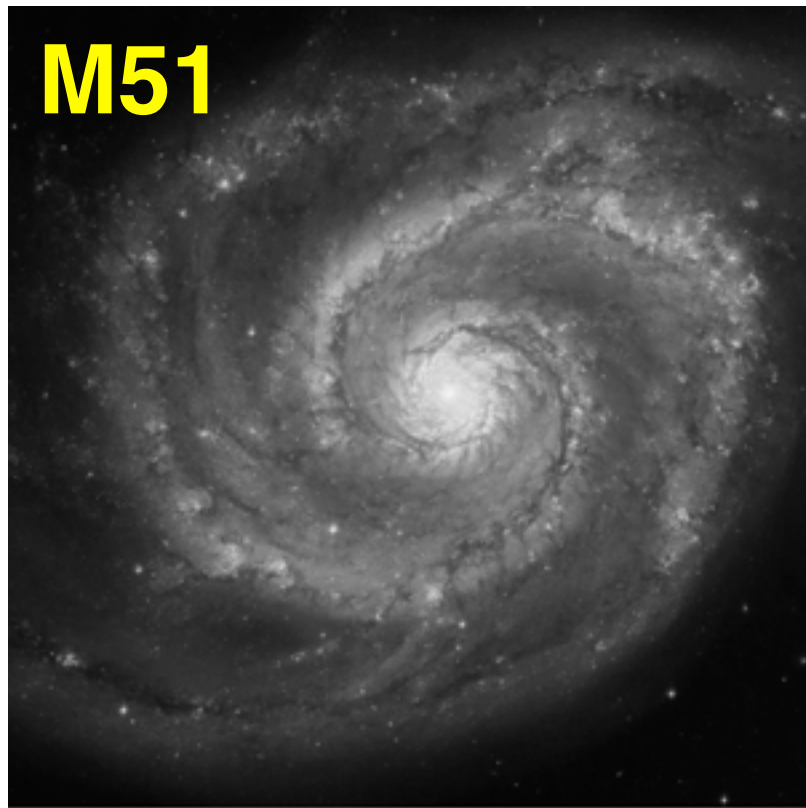


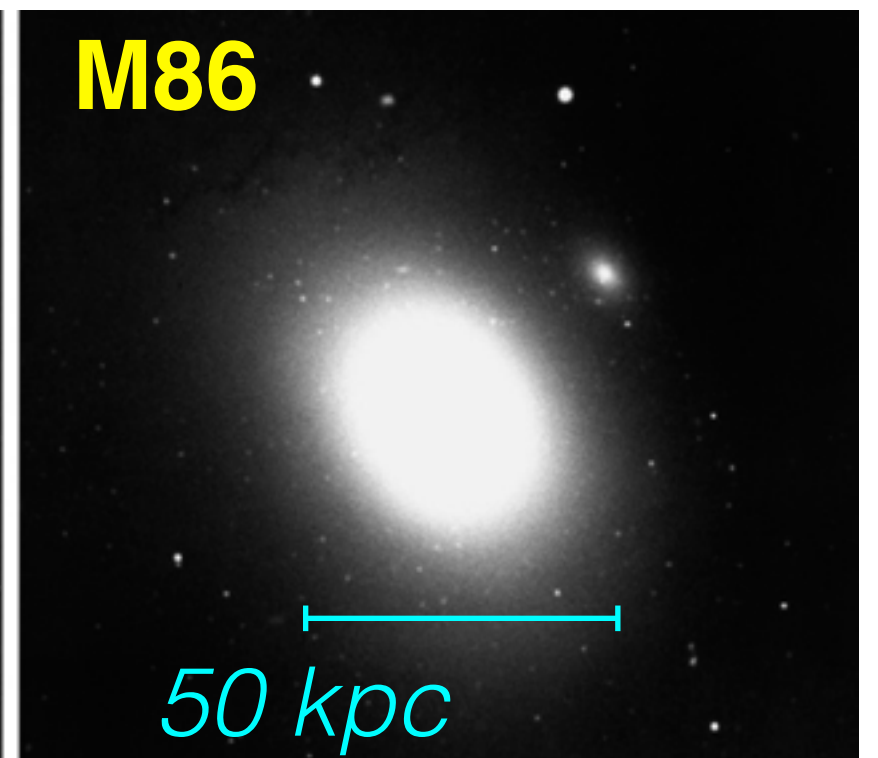
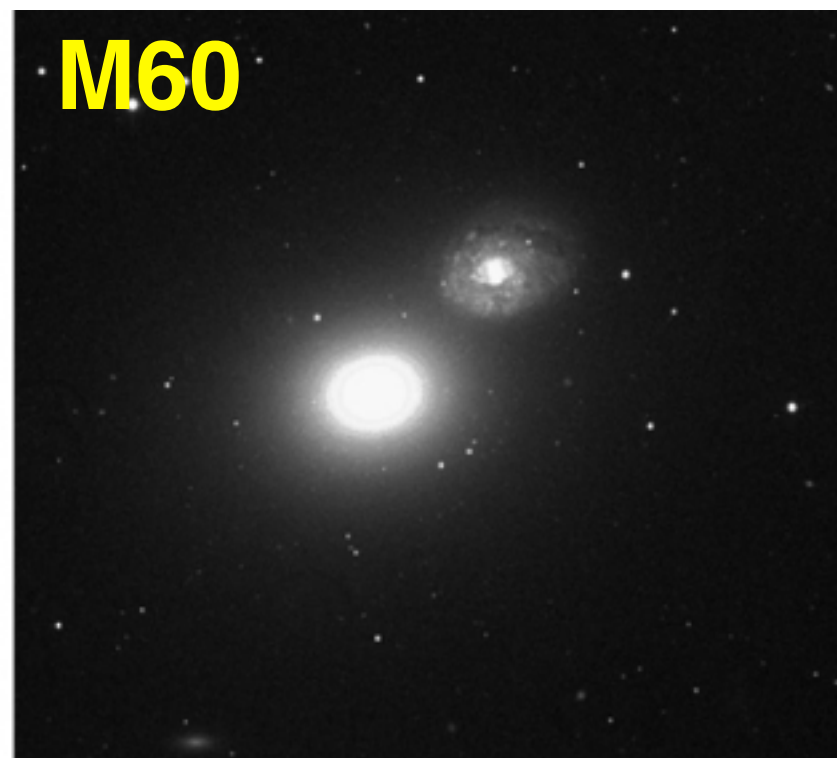
Spiral and Elliptical Galaxies



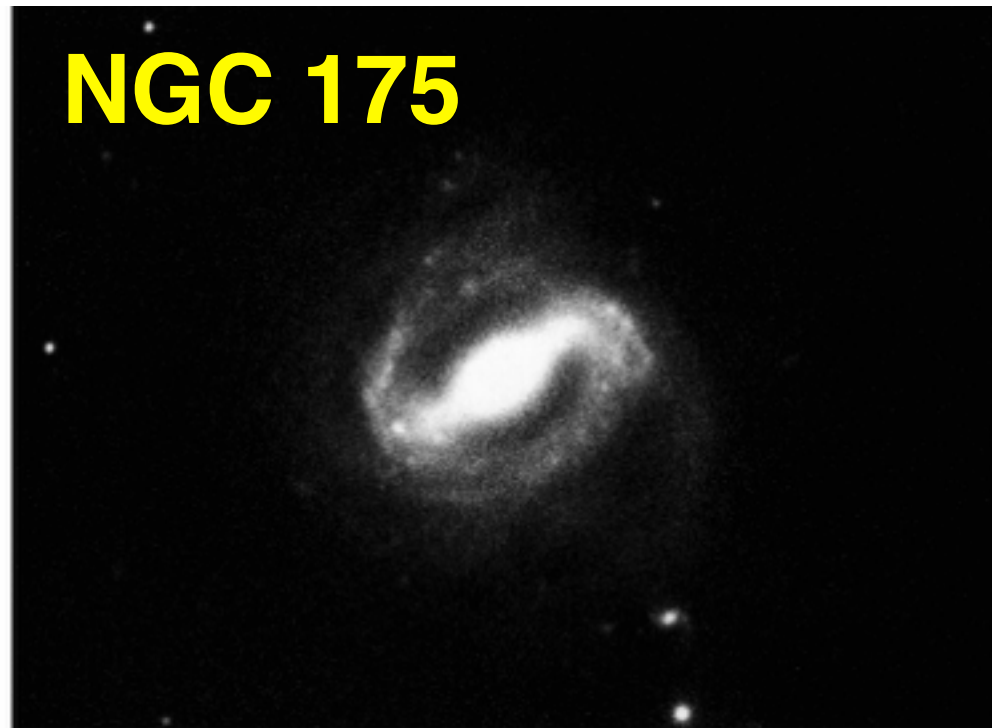
Maoz Figure 7.1

*Each image about
20 kpc across*

Maoz Figure 7.8



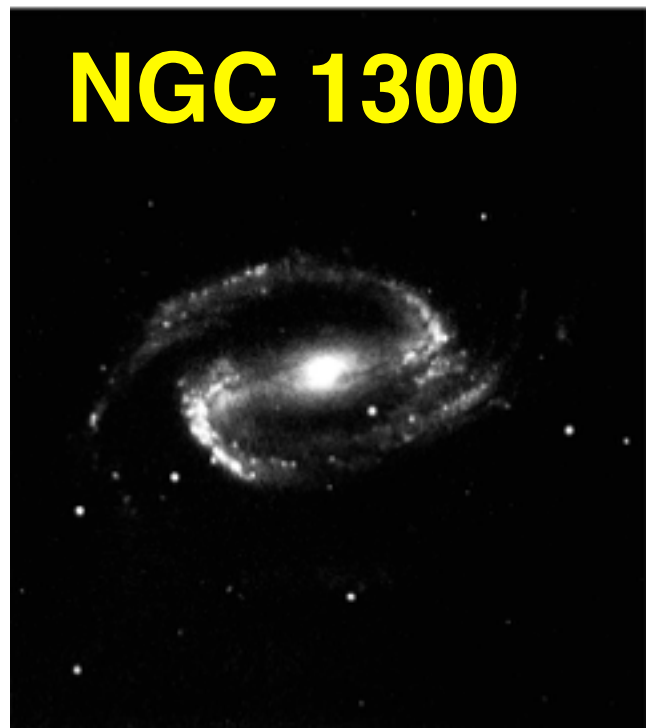
Barred Spiral Galaxies



(a)

**Carroll & Ostlie
Figure 25.6**

*Does the Milky Way
Galaxy have the
structure of a
barred spiral?*

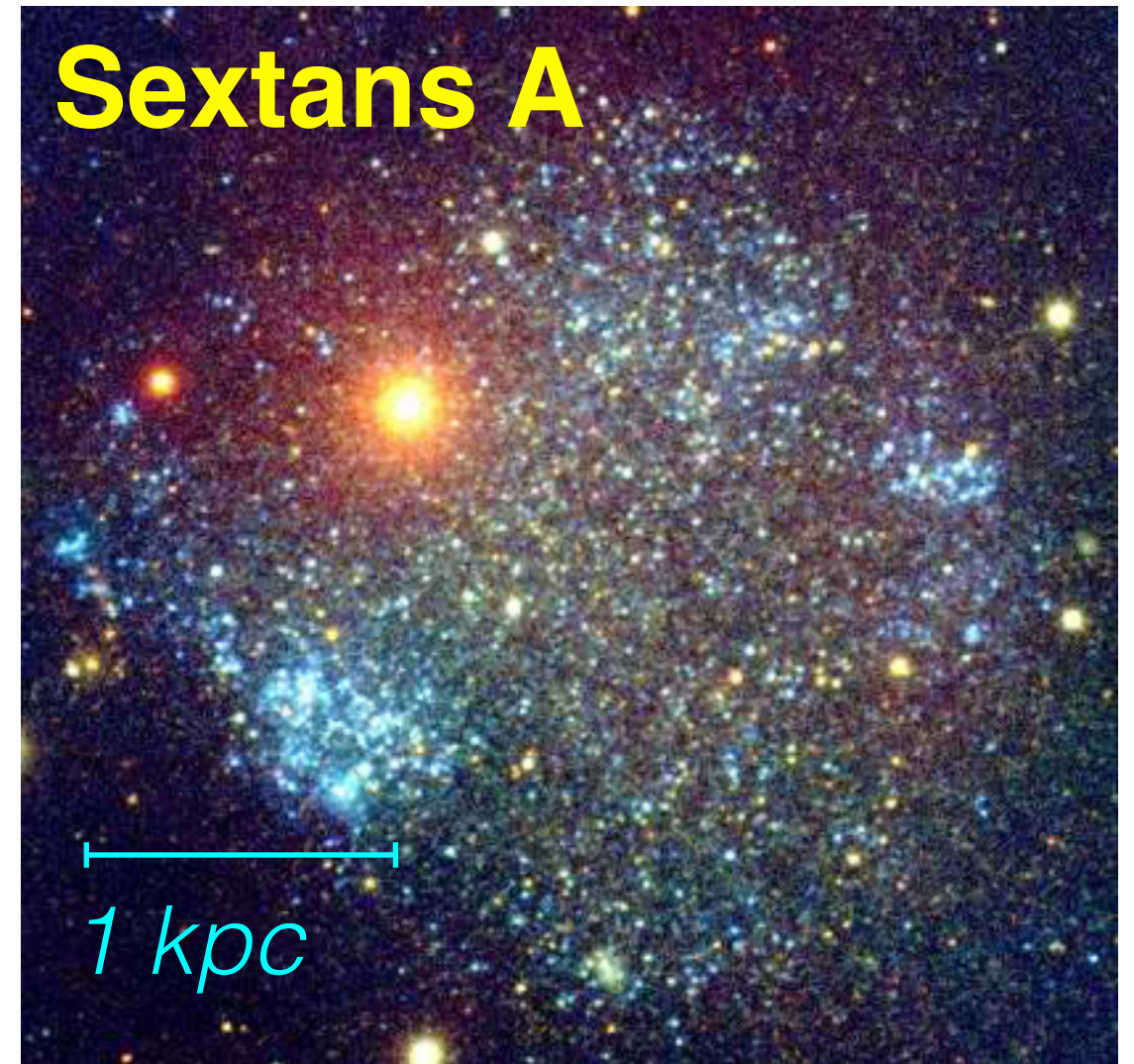
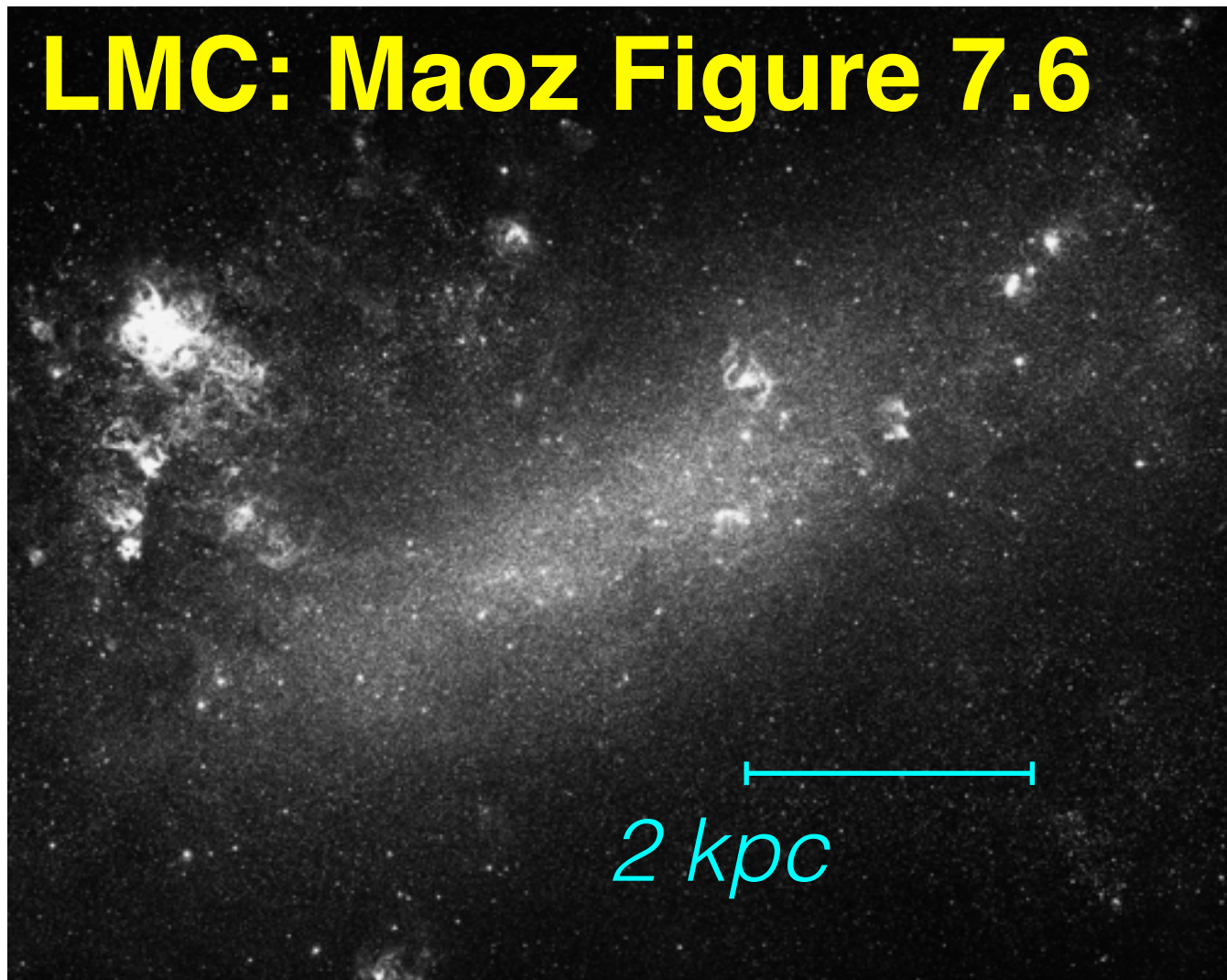


(b)



(c)

Irregular Galaxies



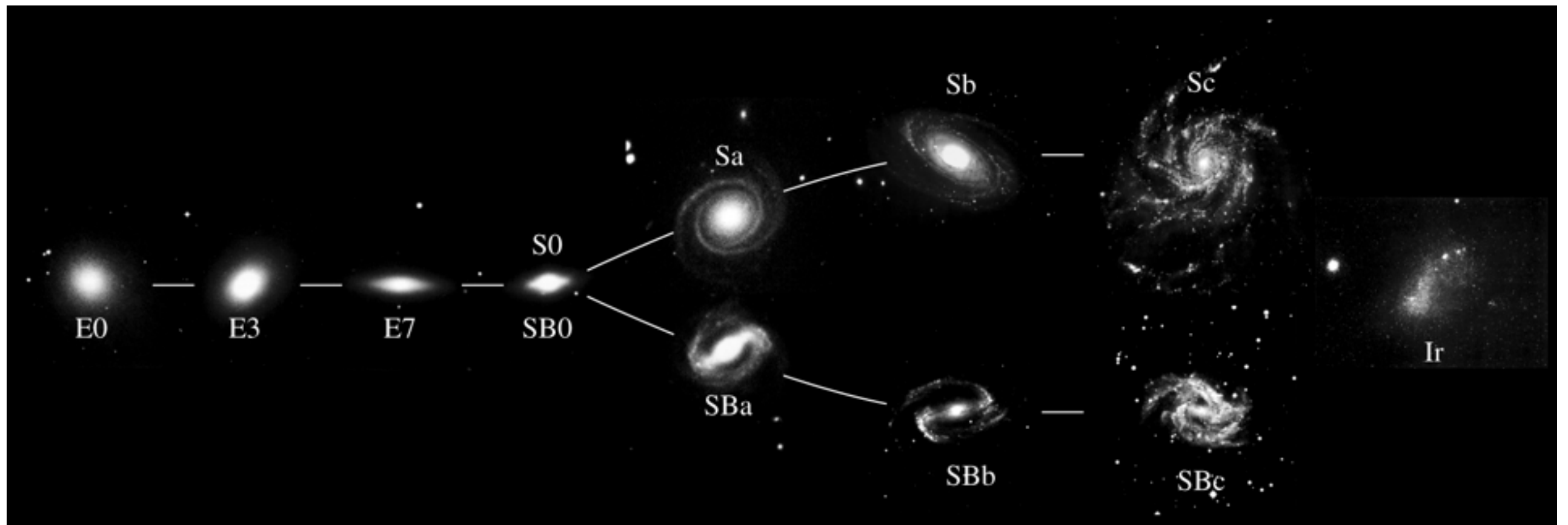
These are small and numerous and tend to hang around near larger galaxies as part of large groups.

Hubble's "Tuning Fork"

Carroll and Ostlie Figure 25.1

"Early..."

"...Late"

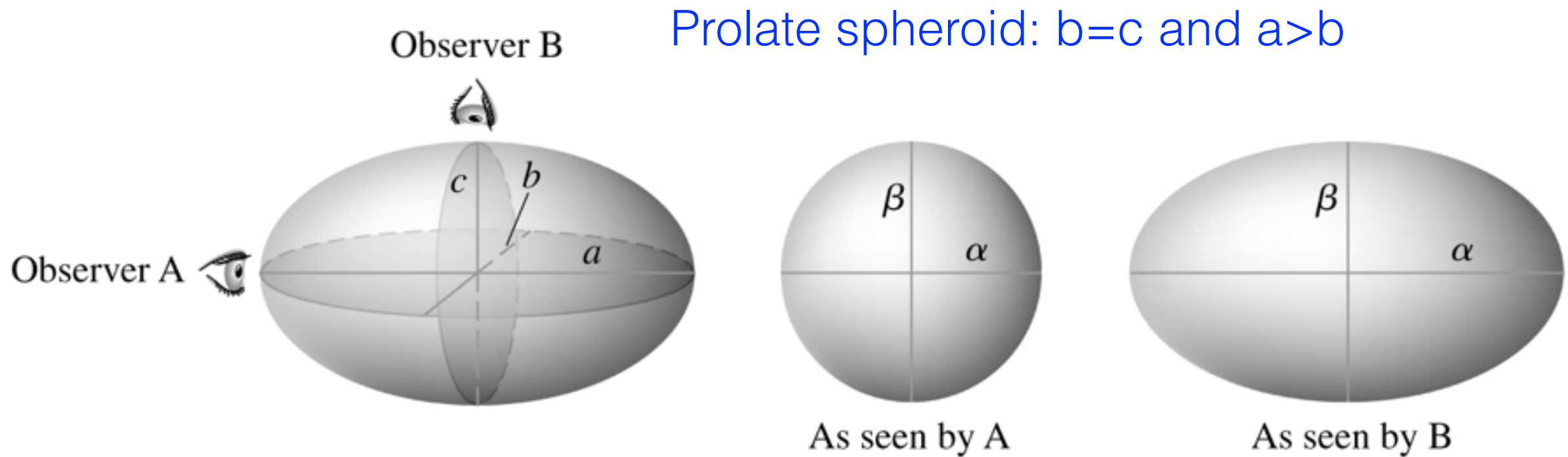
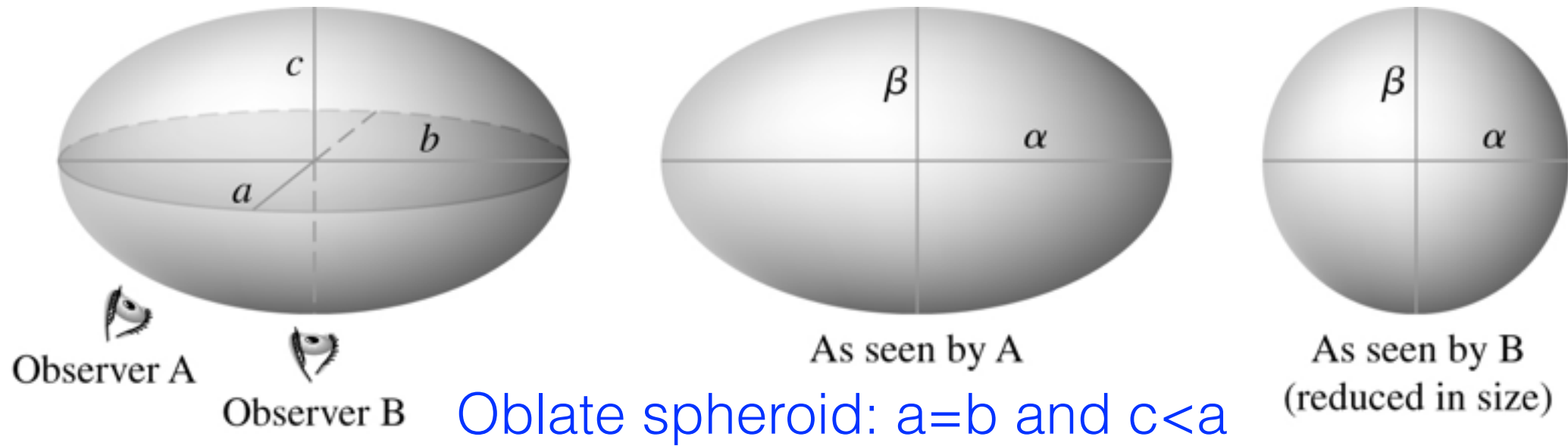


But this is not an evolutionary progression!

Elliptical Classification

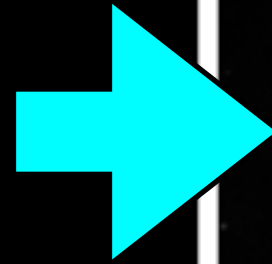
“E ϵ ” where $\epsilon = 1 - \beta/a$

Carroll and Ostlie Figures 25.2 and 25.3



NGC 4038/9

Optical
& 21cm



H-II
Regions

NGC 4676

Maoz Figure 7.6