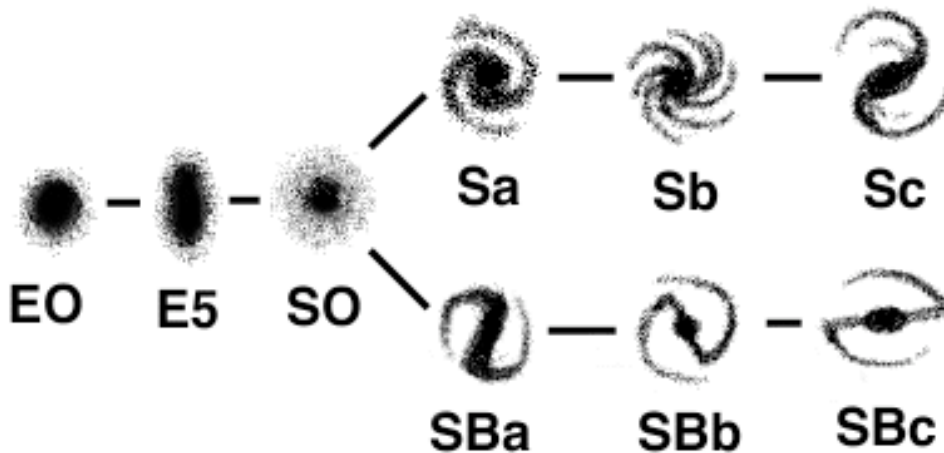


Hubble's Classification Scheme

Edwin Hubble developed a galaxy classification scheme consisting of four types: elliptical, spiral, barred spiral, and irregular. Three of these types are represented in the "tuning fork" diagram below.



Elliptical Galaxies

An elliptical galaxy shows no spiral structure and can vary from almost round (what Hubble called E0) to almost cigar shaped (called E7). This classification is based on our perspective from Earth and not on the actual shape.

Spiral Galaxies

As their name implies, spiral galaxies have outstretched, curving arms suggestive of a whirlpool or pinwheel. Hubble distinguished different sub-classes according to the tightness of the arms and the size of the nucleus. He called these Sa, Sb, and Sc. In terms of the arms, Sa is the tightest wound while Sc is the most open. In terms of the nucleus, Sa has the largest while Sc has the smallest. The galaxies that appear to have a spiral disc but no visible arms are called S0.

Barred Spirals

Barred spirals show the same spiral structure as normal spirals, and also a prominent bar through the nucleus. The spiral arms emerge from the end of the bar. The sub-classifications are the same as for normal spirals.

Irregulars

Certain galaxies lack either an obvious spiral structure or nuclear bulge, appearing instead as a random collection of stars with no obvious order. They are distinguished from ellipticals by their lack of symmetry.