Many people in history had ideas to explain the universe. Most early [models](https://simple.wiktionary.org/wiki/model) had the Earth at the centre of the Universe. Some [ancient Greeks](https://simple.wikipedia.org/wiki/Ancient_Greece) thought that the Universe has infinite space and has existed forever. They thought it had a set of [spheres](https://simple.wikipedia.org/wiki/Sphere) which corresponded to the fixed stars, the [Sun](https://simple.wikipedia.org/wiki/Sun) and various [planets](https://simple.wikipedia.org/wiki/Planet). The spheres circled about a spherical but unmoving [Earth](https://simple.wikipedia.org/wiki/Earth).

Over the centuries, better observations and better ideas of gravity led to [Copernicus](https://simple.wikipedia.org/wiki/Copernicus)'s [Sun](https://simple.wikipedia.org/wiki/Sun)-centred model. This was hugely controversial at the time, and was fought long and hard by authorities of the [Christian church](https://simple.wikipedia.org/wiki/Roman_Catholic_Church) (see [Giordano Bruno](https://simple.wikipedia.org/wiki/Giordano_Bruno) and [Galileo](https://simple.wikipedia.org/wiki/Galileo)).

The invention of the [telescope](https://simple.wikipedia.org/wiki/Telescope) in the [Netherlands](https://simple.wikipedia.org/wiki/Netherlands), 1608, was a milestone in astronomy. By the mid-19th century they were good enough for other galaxies to be distinguished. The modern optical (uses visible light) telescope is still more advanced. Meanwhile, the [Newtonian](https://simple.wikipedia.org/wiki/Isaac_Newton) [dynamics](https://simple.wikipedia.org/w/index.php?title=Dynamics&action=edit&redlink=1) ([equations](https://simple.wikipedia.org/wiki/Equation)) showed how the [Solar System](https://simple.wikipedia.org/wiki/Solar_System) worked.

The improvement of telescopes led astronomers to realise that the Solar System is in a [galaxy](https://simple.wikipedia.org/wiki/Galaxy) made of billions of stars, the [Milky Way](https://simple.wikipedia.org/wiki/Milky_Way), and that other galaxies exist outside it, as far as we can see. Careful studies of the distribution of these galaxies and their [spectral lines](https://simple.wikipedia.org/wiki/Spectral_line) have led to much of [modern cosmology](https://simple.wikipedia.org/wiki/Physical_cosmology). Discovery of the [redshift](https://simple.wikipedia.org/wiki/Redshift) showed that the Universe is expanding (see [Hubble](https://simple.wikipedia.org/wiki/Hubble)).