

Explained in 60 Seconds: Why is Pluto not a Planet?

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On 24 August 2006 an International Astronomical Union (IAU) resolution changed the shape of the Solar System and redefined what it meant to be a planet. As a result, Pluto, the smallest and most recently discovered planet in the Solar System, became a dwarf planet.

In the months that followed, the initial surprise over this decision gave way to acceptance, although many remembered Pluto the planet fondly.

These memories surfaced again just recently, when NASA's New Horizons spacecraft flew by Pluto and captured the distant world with vivid clarity. People around the globe asked anew: Why is Pluto not a planet?

Pluto became the smallest planet, and, for most of its orbit, the furthest out from the Sun, following its discovery in 1930 by Clyde Tombaugh. However, the early 90s saw the discovery of a spate of objects that resided beyond Neptune and Pluto. Their existence cast doubt upon the validity of this initial decision. Pluto's pedigree was called into question once and for all with the discovery of Eris in January 2005. Although slightly smaller than Pluto, Eris was found to be more massive, and questions about what it really means to be a planet again came to the fore.

Pluto was reclassified in Prague at the IAU XXVI General Assembly. A resolution passed on the closing day of the assembly provided a threefold definition of a planet. Pluto met the first two criteria with admirable ease: it is a celestial body that orbits the Sun, it is round, indicating that

a state of hydrostatic equilibrium prevails, indicating that inward gravitational forces are balanced by an outward pressure.

The final hurdle, however, proved fatal. To be a planet, the object must have cleared the neighbourhood around its orbit. Pluto is surrounded by shards of rock and ice, and so failed miserably to achieve this; its cluttered surroundings and poor house-keeping were its undoing.

This third criterion is, in effect, a determination of size. Pluto is too small to gravitationally dominate its environment by absorbing and ejecting material in its path. It is for this reason that when we look upon the New Horizon mission's high-definition images of Pluto, we see more that a dwarf planet among many; we see a planet that once was, and an important piece of astronomy's history.

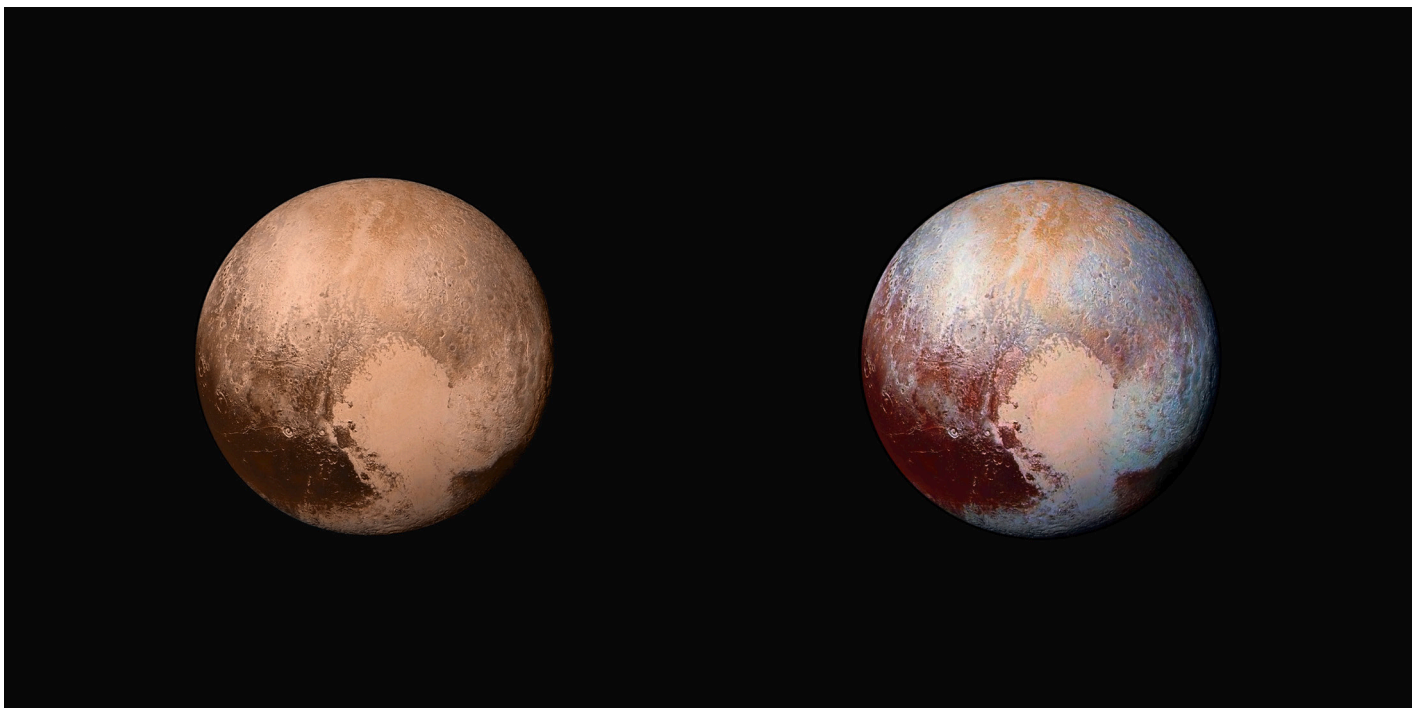


Figure 1. In both of these views of the dwarf planet Pluto, four images from New Horizons' Long Range Reconnaissance Imager (LORRI) were combined with colour data from the Ralph instrument. In the left image this was done to create a sharper view of Pluto and on the right to create an enhanced colour view.