

CELESTIAL MISFIT

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After years of arguing over whether Pluto is a planet, in 2006 the International Astronomical Union (IAU) [voted to remove Pluto's planetary status](#). Now some researchers are challenging this decision, citing the manner in which scientific tradition has dealt with the taxonomy of planets. The IAU, in 2006, designated Pluto a 'dwarf planet' along with Ceres in the asteroid belt and Xena, an object in the Kuiper belt, which is an icy ring of frozen objects that circle the solar system beyond Neptune's orbit. It was a bid to overcome sentiment and go by scientific rationale. The meeting defined three conditions for a celestial object to be called a planet: one, it must orbit the Sun; two, it should be massive enough to acquire an approximately spherical shape; three, it has to 'clear its orbit', that is, be the object that exerts the maximum gravitational pull within its orbit. Owing to this third property, if an object ventures close to a planet's orbit, it will either collide with it and be accreted, or be ejected out. However, Pluto is affected by Neptune's gravity. It also shares its orbit with the frozen objects in the Kuiper belt. Based on this, the IAU deemed that Pluto did not 'clear its orbit'. Dwarf planets, on the other hand, need only satisfy the first two conditions.

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This rationale has been questioned by Philip Metzger, a planetary physicist who has worked with the U.S. National Aeronautics and Space Administration, and others who have studied the history of classifying planets and come up with several exceptions to the third rule. In a paper published in the journal *Icarus*, they point out that the only work in history that used this rule to classify planets was an article by William Herschel in 1802. They also argue that this work was based on reasoning and observations that have since been disproved. However, the last argument does not build up a strong enough case to give up what is, in fact, a sensible rule. Physics has many examples where an idea was once discarded for being incorrect, and much later emerged in a different form and gained acceptance — the concept of photons, for instance. And then again, if Pluto were to be re-designated a planet, many more complications would arise. For one thing, Charon, Pluto's moon, is much too large to be called a satellite. Judging by this, the Charon-Pluto system should then rightly be called a binary planet system. This would then lead to classifying several other sets of bodies as binary planets. Recent research shows that both the Kuiper Belt and the Oort cloud, a shell of objects that surrounds the entire solar system far beyond the Kuiper belt, contain objects that can then be called planets, thereby complicating the issue. Denying planetary status to Pluto is then nothing less than a sweep of Occam's razor, and Pluto remains a dwarf planet, albeit an exceptional one.

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