Defining Pluto and a 'Planet'

What is the issue?

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- In 2006, the International Astronomical Union (IAU) voted to remove Pluto’s planetary status.
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- Some researchers are now challenging this decision.
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What was the 2006 IAU's decision?

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- The IAU, in 2006, designated Pluto a ‘dwarf planet’ along with Ceres in the asteroid belt and Xena.
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- Xena is an object in the Kuiper belt which is an icy ring of frozen objects that circle the solar system beyond Neptune’s orbit.
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- The designation was a bid to overcome sentiment and go by scientific rationale.
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- The meeting accordingly defined three conditions for a celestial object to be called a 'planet' -
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i. it must orbit the Sun
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ii. it should be massive enough to acquire an approximately spherical shape
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iii. it has to ‘clear its orbit’ i.e. be the object that exerts the maximum gravitational pull within its orbit
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- 'Dwarf planets', on the other hand, need to only satisfy the first two conditions.
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Why is Pluto not a Planet?

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- As per the third condition, if an object ventures close to a planet's orbit, it will either collide with it and be accreted, or be ejected out.
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- But, in case of Pluto, it is affected by Neptune's gravity.
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- It also shares its orbit with the frozen objects in the Kuiper belt.
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- Based on this, the IAU deemed that Pluto did not 'clear its orbit' (the third rule).
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- Hence, it was designated a dwarf planet.
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What is the contention here?

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- **Third rule** - The above rationale has been questioned by some who put forth several exceptions to the third rule.
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- They cite the manner in which scientific tradition has dealt with the taxonomy of planets.
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- The only work in history that used the third rule to classify planets was an article by William Herschel in 1802.
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- It is also argued that this work was based on reasoning and observations that have since been disproved.
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- However, the argument is not a strong enough case to give up what is, in fact, a sensible rule.
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- Evidently, physics has many examples where an idea once discarded for

being incorrect, later emerged in a different form and gained acceptance.
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- **Planet** - Given these, even if Pluto were to be re-designated a planet, many more complications would arise.
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- Charon, Pluto’s moon, is much too large to be called a satellite.
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- Judging by this, the Charon-Pluto system should then rightly be called a binary planet system.
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- This would then lead to classifying several other sets of bodies as binary planets.
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- Also, both the Kuiper Belt and the Oort cloud contain objects that can then be called planets, thereby complicating the issue.
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- Oort cloud is a shell of icy objects that surrounds the entire solar system far beyond the Kuiper belt.
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- Denying planetary status to Pluto is the easy way out of the debate at this stage.
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- Hence, Pluto remains a dwarf planet, although an exceptional one.
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Source: The Hindu

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Quick Fact

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International Astronomical Union (IAU)

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- The International Astronomical Union (IAU) was founded in 1919.
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- Its mission is to promote and safeguard the science of astronomy in all its aspects through international cooperation.
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- It serves as the internationally recognized authority for assigning designations to celestial bodies and surface features on them.
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