

# Astronomers React to Pluto's Planetary 'Demotion'

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Several Johns Hopkins University astronomers described a decision Thursday to strip Pluto of its planetary status as a "muddled" ruling that is unlikely to settle ongoing debates over how to define a planet and whether the term should apply to Pluto. In an informal poll, only one astronomer was pleased to hear about Pluto's new status.

Their reactions came after a vote by the International Astronomical Union, meeting in Prague, that defined a planet as "a celestial body that is in orbit around the sun, has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a ... nearly round shape, and has cleared the neighborhood around its orbit." Because Pluto does not meet the last criterion, the IAU demoted it to "dwarf planet" status.

The decision leaves the solar system with only eight planets. Since its discovery in 1930, Pluto has been considered the system's ninth planet.

Following are some comments about the IAU decision from astronomers at the Henry A. Rowland Department of Physics and Astronomy at the Johns Hopkins University's Krieger School of Arts and Sciences and The Johns Hopkins University Applied Physics Laboratory. The Applied Physics Laboratory is managing the mission of NASA's New Horizons spacecraft, which was launched earlier this year on a 9 1/2-year journey to explore the distant region that includes Pluto.

\* Andrew Cheng, Johns Hopkins University Applied Physics Laboratory:

“I think the IAU vote is a muddled compromise that will not settle the question of ‘What is a planet?’ Pluto is not a ‘planet’ according to resolution 1, but it is a ‘dwarf planet’ by resolution 2. So is it a ‘planet?’ I thought so before and still think so now -- but those who did not think so before can now point to the IAU definition and say that Pluto is really not a planet but a sort of second-class citizen.

“Actually, that is the same situation that has prevailed with Ceres, other asteroids, and comets for many years (centuries in the case of some of these objects). Those objects were known as minor planets before, but now a few of the minor planets have been promoted to ‘dwarf planets.’

“So I suppose I should be happy that Pluto wasn't demoted all the way into the minor planet category.”

\* Harold (Hal) Weaver, Johns Hopkins University Applied Physics Laboratory and New Horizons project scientist:

“I don't expect the hoopla over the demotion of Pluto from the realm of ‘classical planets’ to have any effect on the conduct of the New Horizons mission. The scientific investigation of Pluto remains an important component of our effort to understand the processes that shaped the outer solar system, even if some of the objects in that region defy our efforts to categorize them. The New Horizons mission remains as viable as ever because it will provide the initial reconnaissance of one of the solar system's newly discovered frontiers.

“Regarding the resolution itself, I'm with Andy Cheng in concluding that the situation is still somewhat muddled. What exactly is meant by a planet ‘clearing its neighborhood?’ Since many ‘plutinos’ ... (including Pluto) ... cross Neptune’s orbit, I'd say Neptune's neighborhood still needs some clearing! ... It just seems a bit risky to me to base a definition on a theoretical construct (‘dynamically cleared regions’) that's only approximate at best and may change significantly as our understanding of planet formation evolves over time.

“I further note that there have been particularly large swings in the theories of outer solar system dynamical evolution during the past decade. What was ‘conventional wisdom’ five years ago has been replaced with the latest fad, and I don't expect that situation to change any time soon.”

\* Karl Glazebrook, professor in the Department of Physics and Astronomy:

“What is meant by ‘clearing its orbit?’ How does this relate to having an orbit overlapping Neptune? Clearly Neptune has not cleared its orbit.

“They should have gone with something clean like a size criterion. Seems to me like a muddled compromise which will just cause more problems (what about some of the weird orbits extra-solar planets have?) and the issue will have to be revisited again.”

\* William P. Blair, research professor in the Department of Physics and Astronomy and chief of observatory operations for NASA's Far Ultraviolet Spectroscopic Explorer Satellite, operated by Johns Hopkins: “I think the demotion of Pluto into the realm of other minor objects outside the orbit of Neptune is the most consistent thing to do to straighten out the nomenclature of our solar system. However, I don't find the wording of the official planet definition to be very clear, and hence it will continue to be open to interpretation.

“I find it comforting to know, though, that Pluto hasn't changed just because of our nomenclature. It is the same today as it was yesterday, and as it has been for thousands of years. It is still the most accessible of the objects beyond Neptune that we can study, and studying it should reveal much new information about the outer solar system.”

\* Richard Conn Henry, professor in the Department of Physics and Astronomy:

“I am delighted that rationality has prevailed! Keep in mind that our own Sun is a dwarf star ... and Pluto is now a dwarf planet! Pluto is an extremely interesting and important object, and I am overjoyed that NASA's New Horizons mission is on its way to Pluto! Hurrah for Pluto, first dwarf planet to be visited by a NASA mission!”

Source: Johns Hopkins University

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