

Pluto Not a Planet, Astronomers Rule
Mason Inman
for National Geographic News
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Pluto has been voted off the island. The distant, ice-covered world is no longer a true planet, according to a new definition of the term voted on by scientists today.

"Whoa! Pluto's dead," said astronomer Mike Brown, of the California Institute of Technology in Pasadena, as he watched a Webcast of the vote. "There are finally, officially, eight planets in the solar system."

In a move that's already generating controversy and will force textbooks to be rewritten, Pluto will now be dubbed a dwarf planet.

But it's no longer part of an exclusive club, since there are more than 40 of these dwarfs, including the large asteroid Ceres and 2003 UB313, nicknamed Xena—a distant object slightly larger than Pluto discovered by Brown last year.

"We know of 44" dwarf planets so far, Brown said. "We will find hundreds. It's a very huge category."

A clear majority of researchers voted for the new definition at a meeting of the International Astronomical Union (IAU) in Prague, in the Czech Republic. The IAU decides the official names of all celestial bodies.

The tough decision comes after a multiyear search for a scientific definition of the word "planet." The term never had an official meaning before.

What Is a Planet Today?

According to the new definition, a full-fledged planet is an object that orbits the sun and is large enough to have become round due to the force of its own gravity. In addition, a planet has to dominate the neighborhood around its orbit.

Pluto has been demoted because it does not dominate its neighborhood. Charon, its large "moon," is only about half the size of Pluto, while all the true planets are far larger than their moons.

In addition, bodies that dominate their neighborhoods, "sweep up" asteroids, comets, and other debris, clearing a path along their orbits. By contrast, Pluto's orbit is somewhat untidy.

The new definition also establishes a third class of objects that orbit the sun—"solar system bodies," which would apply to many asteroids, comets, and moons.

The new definition of "planet" retains the sense that a true planet is something special.

"It's going to be hard to find a new planet," Brown said. "You'd have to find something the size of Mars. Finding a new planet will really mean something."

Raising the Bar

A previous proposal, unveiled last week, would have set the bar for planethood considerably lower.

The earlier proposal also required planets to be round as a result of their own gravitational force. But it did not specify that a planet has to dominate its region, and that omission would have granted planet status to a lot of bodies.

Last week's proposal would have kept Pluto as a planet. But it also would have upgraded Charon to a planet in its own right. The proposal would have made full-fledged planets of 50 or more additional objects, including Ceres and 2003 UB313.

"Astronomers, who are normally mild-mannered types, are revolting against the IAU proposal," Brown wrote on his Web site last week, soon after the initial unveiling.

In response, the IAU committee charged with composing the definition "reversed course completely, and offered up a definition that's much more scientifically palatable," said astrophysicist Alan Boss of the Carnegie Institution in Washington, D.C., today.

"They reworked it and it has become a much superior definition. I think this will stand the test of time," Boss said.

Disgruntled

But for now the vote is drawing some opposition. Planetary scientist Andy Cheng said the definition is ambiguous, because it hasn't answered the question "how round is round?"

"This will be an issue in the future," Cheng said. "Dozens of objects are going to be straddling this line. The new definition is not going to help us with this."

"I'll still continue to maintain that Pluto is a planet," he said.

Owen Gingerich is an astronomer and historian at Harvard University in Cambridge, Massachusetts, and head of the IAU committee proposing the definition. He favored a special distinction for Pluto.

Gingerich supported a proposal to call the big eight planets classical planets—as opposed to just plain "planets"—and Pluto and the others dwarf planets, so there would be two classes of planets.

"This would have been much more sensible," Gingerich said.

The IAU members overwhelmingly rejected this idea.

"I think they voted primarily on scientific grounds and were not sensitive to the historical and cultural role that Pluto has played," Gingerich said.

The definition that won the vote is "a bit of a semantic atrocity," he added.

The definition was bound to be messy. It had to be palatable to many researchers and to address the plethora of celestial objects.

But most IAU members agreed that a line should be drawn somewhere to separate the largest bodies from what might be called the riffraff of our solar system.

Not Universal

Last week's proposed definition was meant to apply to all planets in the universe. But, faced with the difficulty of arriving at a consensus on universe-spanning criteria, the IAU committee narrowed the definition to apply only to our solar system.

Richard Conn Henry is an astrophysicist at Johns Hopkins University in Baltimore, Maryland. He says he never considered whether Pluto should be a planet until a few years ago.

But when the planetarium at New York City's American Museum of Natural History removed Pluto from the ranks of the planets, it got him thinking.

"This tiny thing in this oddball orbit—a planet? Give me a break!" Henry said.

"I think that, when the dust settles, people will recognize that there really are just eight planets."