Pluto: Down But Maybe Not Out

By Robert Roy Britt, LiveScience Managing Editor
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If you did not like Pluto's demotion, don't give up hope.

Arguments over the newly approved definition for "planet" are likely to continue at least until 2009, and astronomers say there is much that remains to be clarified and refined.

While it is entirely unclear if the definition could ever be altered enough to reinstate Pluto as a planet, astronomers clearly expect some changes.

In a statement today, the largest group of planetary scientists in the world offered lukewarm support for the definition, which was adopted last week by a vote of just a few hundred astronomers at the International Astronomical Union (IAU) General Assembly meeting in Prague.

Lukewarm support

The definition basically states that the eight worlds from Mercury to Neptune are planets, and that Pluto and other small round objects in the outer solar system are not planets but will be referred to as dwarf planets.

The wording has been heavily criticized as being vague and arbitrary and failing to include planets around other stars. One highly controversial aspect is the idea that a planet must control a zone of space by clearing it of other objects. In fact, Earth and some of the giant planets have not cleared their paths—asteroids cross the planetary orbits frequently and in some cases orbit in lockstep with the planets.

Nonetheless, the Division for Planetary Sciences (DPS) of the American Astronomical Society (AAS) "recognizes the authority of the IAU to render a decision," today's statement reads. "All definitions have a degree of fuzziness that requires intelligent application: what does 'round' really mean? What does it mean to 'control a zone'?"

The statement suggests there are at least three years of wrangling ahead:
"These are technical issues to be addressed by Division III of the IAU, currently chaired by Ted Bowell, a fellow DPS member. There is still work to be done, too, in constructing a definition that is generally applicable to extra-solar planetary systems. These and other changes, radical or moderate, presumably will be addressed at the next IAU General Assembly in Rio de Janeiro in 2009, and the DPS community will continue to be involved in all stages of this process.

[*UPDATE 9:10 p.m. ET:* A separate group of more than 300 astronomers announced today they will not use the new definition.]

Lack of authority?

Other astronomers have said or indicated that the IAU decision might not carry much weight.

David Morrison, an astronomer at NASA's Ames Research Center, was in Prague for the debates and the vote. He called the resulting definition "reasonable" but termed the IAU process "highly convoluted."

"The definition of a planet is not primarily a science issue. Scientists can (and often do) use all sorts of jargon," Morrison told *SPACE.com*. "This issue is of interest because non-scientists, including writers of science textbooks, want a definition. Now they have one. But it is not obvious to me that planetary scientists will adjust their terminology because of the IAU votes."

The IAU's final proposal was lambasted by many astronomers for having been slapped together at the last minute and for not adhering to recommendations from two separate committees. Morrison was on an IAU committee of astronomers that debated for months on a definition proposal. The one they adopted, Morrison said, was approved by the committee in a vote of 11-8. But it never saw the light of day. Ultimately, another committee of seven, including historians, was formed by the IAU, and the second committee's proposed definition was scrapped too, in the last moments in Prague.

"Is Pluto, then, still a planet? Yes and no," Morrison said. "The answer is semantic, based on whether dwarf planets are planets, just as dwarf pines are pines. I would say that Pluto is a planet, but it is a dwarf planet, and the first example of the class of trans-Neptunian dwarf planets."

Lack of science

The whole debate, many astronomers say, has little if anything to do with science.

Geoff Marcy, a researcher at the University of California, Berkeley, has led the discovery of dozens of planets outside our solar system. "The astrophysics of planetary bodies is so rich and complex that defining 'planet' has never been an issue under discussion among professionals," Marcy said in an email interview earlier this week.

Pressed on whether the definition made any sense, Marcy said: "It makes no scientific sense to have a definition that pertains only to our solar system and not to other planetary systems."

The DPS represents 1,300 astronomers, about a third of them from outside the United States. Today's statement included a phrase that hints at the discontent felt among many members and the likelihood that all is not said and done:

"Ultimately, the definition of a planet will come through common usage and scientific utility. There is no need to throw away current school texts; Pluto has not gone away."